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Goodbye, Spaceship Earth

The dawn of private ventures in space

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In an exclusive new interview, Dr. Franz Pick warns . . .

"The U.S. government will issue a new currency—perhaps as early as 1980.

It will change 20 old dollars for 1 new hard dollar."

Dr. Franz Pick is one of the world's most respected authorities on currency matters and precious metals. He studied currency and inflation theories at the University of Hamburg and the Sorbonne in Paris. His degrees include BS, MA, MBA, LLD, and PHD. He is the Publisher of *Pick's World Currency Report* and *Pick's Currency Yearbook*, two internationally respected publications on currencies. He is the author of 6 books on silver and gold.

Dr. Franz Pick

Now, in an exclusive new interview with the **Silver & Gold Report**, Dr. Pick discusses his concern for the dollar and its effects on investors. Here are examples of his analyses:

On the Dollar

"The most serious problem we face today is the debasement of our currency by the government . . . As you can observe by looking at the official U.S. cost of living statistics, the dollar by early 1978 had been debased to less than one-quarter of its 1940 value. My own unofficial figures put the value of the dollar at around 9% of its pre-war value . . . The government will continue to debase the dollar until it is worth about a nickel. [Then it will repudiate its debts] by exchanging 20 old dollars for each new dollar. This may come as early as 1980."

On the Outlook for Investors

"[Dollar-denominated assets] will be wiped out . . . Many people will be ruined. I'm afraid the readjustment to real values will bring much pain and suffering."

On Traditional Investments

"Currency debasement destroys the value of corporate bonds, stocks, life insurance policies, annuities, and all other debt instruments denominated in dollars. We may be the richest nation in the world, but our assets are melting away before our eyes and virtually no one recognizes this fact."

"Gold is your best protection." —Dr. Franz Pick

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How to Invest

Dr. Pick also shows you what forms of gold to invest in. He explains how to buy gold and legally avoid sales tax. He explains the critical mistake many investors make by taking out a safe deposit box, and tells you how to avoid it. He points out a serious danger of owning gold coins—overlooked by many owners—and describes how to avoid it, too.

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Dr. Franz Pick's interview recently appeared in the **Silver & Gold Report**, an impartial independent, twice-monthly Newsletter. A copy of this interview is yours as a BONUS with a 3-month 6-issue Introductory Subscription for only $15. Simply clip and mail the coupon with your $15 check or money order. Or, if you wish, you may charge your subscription to your Master Charge or Visa account.

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In-depth interviews with a broad range of experts in silver and gold such as Dr. Franz Pick, T. J. Holt, Ira U. Cobleigh, Henry Hazlitt, Dr. Nicholas Deak and John Exter • Analyses of price movements • Price charts • Relevant economic data • Book reviews • Editorials • In-depth articles about silver and gold.

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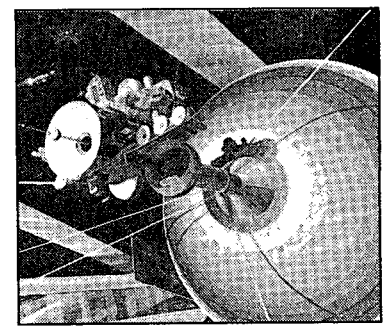

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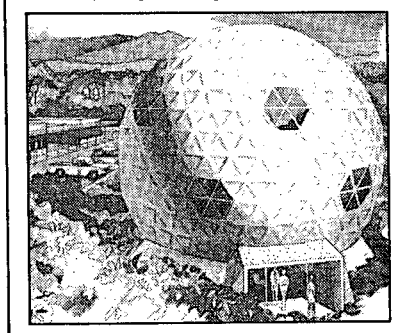

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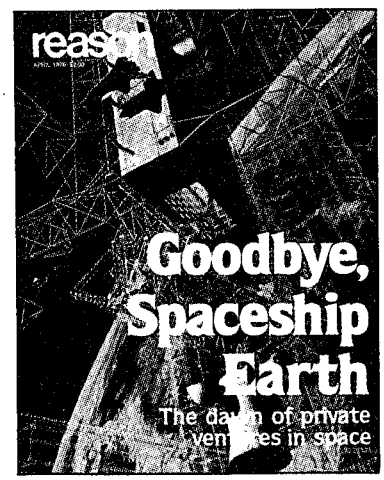

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editor's notes

• **CONFERENCE PLANS.** The Liberty Fund conference on regulation cohosted by the Reason Foundation and the UCSB Economics Department, as announced here previously, will take place this fall. It will explore many of the normative—value-related—aspects of government regulation, rather than focusing on cost-benefit analysis. As an interdisciplinary gathering, it will bring together speakers from the fields of law, economics, and philosophy. Confirmed speakers include Dean Thomas Haggard of South Carolina's School of Law; James Liebeler, former member of the FTC and now professor at UCLA's School of Law; Steven Kelman of the JFK School of Government at Harvard; Yale Brozen of the Graduate School of Business, University of Chicago; Leland Yeager of the University of Virginia's Economics Department; Karl Brunner of the University of Rochester Graduate School of Management; Judith Jarvis Thomson of MIT's Philosophy and Linguistics Department; Nicholas Rescher, editor of the *American Philosophical Quarterly* and university professor at the University of Pittsburgh; and Tibor Machan, the Reason Foundation's educational programs director, on leave from the Philosophy Department at SUNY College, Fredonia, N.Y. A number of scholars will comment on the papers delivered by these speakers.

This is just the first of what we expect will be a series of conferences, exploring various issues of relevance to a good and free society. Suggestions for future conference topics and participants are welcome.

• **PUBLICITY.** Once again, REASON articles will be finding their way into the hands of "those who deal in the currency of ideas as decision-makers, educators, artists, journalists." The International Communications Agency, which earlier reprinted Dick Bjornseth's article on nonzoning in Houston, has now requested (and received) our permission to (a) provide copies of selected tables of contents on subjects of professional interest to various overseas individuals, and (b) photocopy and mail directly to specific individuals articles judged relevant to their interests. This is in addition to the subscriptions to REASON that the agency already maintains for its overseas libraries. We are very pleased to have material from REASON receive this extended international circulation.

Another way to increase access to REASON's ideas is to get more libraries to carry the magazine. Your tax-deductible gift can add REASON subscriptions to your local public, high school, or college library—or that of your alma mater. A special rate is available for library gifts: just $15 per year.

• **CONTRIBUTOR ACTIVITIES.** Two more REASON contributors have accomplishments worth reporting here. Paul Craig Roberts, author of a number of economics/public policy articles in these pages, has become associate editor of the *Wall Street Journal* editorial page. As such, he will contribute a monthly column under the heading "Political Economy," the first of which appeared on January 11. Roberts is also a senior fellow at the Hoover Institution at Stanford University.

Frequent contributor John McClaughry ("The Rise and Fall of the Loco-Focos," March) has just completed a year serving on the National Commission on Neighborhoods. As noted in Trends (p. 10), McClaughry was instrumental in persuading the commission to endorse his proposal for replacing traditional building-code enforcement by a more flexible, voluntary system modeled after that of France. McClaughry heads the Institute for Liberty and Community in Concord, Vermont.

• **STAFF CHANGE.** We bid farewell this issue to Art Director Don Wood, who has decided to become a full-time free-lance illustrator. Don came to REASON in the spring of 1977 and was responsible for a major redesign of the magazine and a steady evolution in graphic quality. Stepping into Don's shoes is our new art director, Nanette Boyer. A graduate of Connecticut College for Women with a B.A. in studio arts, Nanette previously served as art director at the Longevity Research Institute.

• **NEW JOURNAL.** Readers may be interested to learn of the founding of a new publication called *Thinking: The Journal of Philosophy for Children.* The first issue was due out in December. It's intended to cover a wide spectrum of issues in the field of children's thinking skills. A four-issue (one year) subscription is $12, with a special $8 rate for students. Write: IAPC, Division 108, Montclair State College, Upper Montclair, NJ 07043.

—R. P.

HOW TO HIDE YOUR MONEY

"Privacy from government is perhaps the most important thing in life right now." —Harry D. Schultz

Take this confidential test. Find out how vulnerable you are to snooping government agents, jealous relatives and professional thieves. The results may surprise you.

Check if "Yes"

- ☐ If people were to judge you by your car or home, would you be considered rich?
- ☐ Do you usually give a salesperson your complete address and phone number?
- ☐ If asked, would you reveal to an associate how much money you make?
- ☐ Are you receiving unwanted mailings without knowing who's selling your name?
- ☐ If you borrow money from the bank, do you have to disclose what the money is for?
- ☐ Do you buy things in person or by mail that you wouldn't want others to know about?
- ☐ Has your tax return ever been audited?
- ☐ Is it possible in the future that you will become involved in major litigation—divorce, malpractice, bankruptcy, or other expensive lawsuits?
- ☐ Has your bank account or other financial records ever been examined by government agents or private investigators?
- ☐ Do you regard yourself as a maverick or non-conformist—politically, religiously, or socially?

Slightly Vulnerable (Yes 0 to 2 times) There is little for you to worry about. You have kept your profile low. Congratulations!

Vulnerable (Yes 3 to 6 times) Your financial affairs are too well known. You need to take action now to lower your profile.

Highly Vulnerable (Yes 7 to 10 times) Your life is an open book. Too much is known about your affairs. Unless you take immediate steps, you can expect to be a target of government and commercial surveillance.

Are you a Victim of the Bare-all Society?

Today we live in a brash, uninhibited bare-all society. Government, corporations, and the press intrude on every aspect of our lives. Nothing is too sacred to be discussed openly in front of millions, whether it be the intimate details of a divorce, a financial scandal, a sexual affair, or a family tragedy.

Hidden cameras monitor your every move in banks, department stores, supermarkets, and airports. Your baggage is searched when you travel. Your social security number is linked by computer to massive files (over 50 files are kept on every American). When you apply for credit or a job, your financial status is laid bare by the local credit bureau's computer.

Every time you write out a check, or use your credit card, records are made—and are open to the scrutiny of the government. Commercial enterprises are compiling data on you, adding your name to huge mailing lists, without your permission.

ACT NOW TO PRESERVE YOUR PRIVACY—BEFORE IT'S TOO LATE!

CHAPTER 1. WHAT HAVE YOU GOT TO HIDE? Five important reasons why you need privacy in your financial affairs. A list of all records kept on you. The computer and electronic threat to your privacy. The secret life of Howard Hughes.

CHAPTER 2. KEEPING YOUR BANK ACCOUNT CONFIDENTIAL. Why your bank account is no longer secret, and how investigators can get a *distorted* view of your financial affairs. Simple ways to preserve bank privacy. Legal and illegal uses of a fictitious name. What it means when the government examines your bank records, and how to stop it. How to raise cash and other "bearer" instruments, safely and anonymously.

CHAPTER 3. YOUR SECRET FOREIGN BANK ACCOUNT. How to use banks in Mexico, Canada, Switzerland. The truth about Swiss bank secrecy. The famous numbered account—why 15% of the Swiss have them! How tax havens can work in your favor. How to send money abroad undetected. How to move gold in and out of the country confidentially.

CHAPTER 4. HOW TO BEAT THE FOREIGN REPORTING REQUIREMENTS. Five ways to legally avoid the Treasury reporting requirements of foreign accounts. How a major criminal laundered money through secret foreign bank accounts, and how he was caught. The cheapest, and most private, way to buy and sell gold. Copies of the new reporting forms.

CHAPTER 5. THE PRIVATE INVESTOR. A list of reportable and non-reportable investments. How private is your brokerage account? How to invest around the world anonymously—in real estate, stocks, art, and gold. How to buy "bearer bonds" from the U.S. government! The coin market: a discreet, unhampered market in privacy. Diamonds and stamps—the best way to hide money? Warnings about your privacy when dealing with your investment or tax advisors.

CHAPTER 6. PROTECTING YOUR CORRESPONDENCE. How secret is an unlisted telephone number? Advantages of post office boxes, mail drops, and secret correspondence files held abroad. How to get off mailing lists. How to know if your telephone is bugged.

CHAPTER 7. TRAVELING INCOGNITO. Three ways to avoid customs reporting requirements. The truth about those custom computers at ports of entry. Should you have a second passport? The advantages and disadvantages of becoming an expatriate. Copies of the customs reporting forms.

CHAPTER 8. THE CONFIDENTIAL LOAN. Three ways to increase confidentiality in getting a loan. How to raise thousands of dollars overnight confidentially, completely unsecured, without ever sitting down with a loan officer! Your rights to examine your credit bureau records—and how to correct errors.

CHAPTER 9. THE PRIVATE COMPANY. Commercial privacy, corporate spying, and the truth about Dun & Bradstreet reports. How to set up your own anonymous corporation. Advantages of closely held corporations, and why you should avoid going public. Why the Freedom of Information Act is harmful to business. An inexpensive way to resolve conflicts between companies behind closed doors.

CHAPTER 10. SAFEKEEPING YOUR VALUABLES. How safe is your safe deposit box? How to keep your safe deposit box from being inspected by tax authorities at time of death. Foreign boxes in Mexico, Canada, the Bahamas, Switzerland—their "secret" advantage. Private vaults, the best in home safes and how to build secret compartments in your home.

CHAPTER 11. PRIVACY AND THE TAXMAN. Your rights in criminal and civil audits, written by a tax attorney. How to maximize privacy on your tax return. Why you need a tax attorney instead of a tax advisor. Warning against Fifth Amendment returns. Beware of IRS telephone surveillance.

CHAPTER 12. THE PRIVATE WILL. The secret to avoiding the heavy costs of probate as well as publicity when settling your estate.

CHAPTER 13. 24 STEPS TO FINANCIAL PRIVACY. A summary chapter offering you 24 steps you can take to insure your privacy in financial affairs in a matter of months!

CHAPTER 14. UPDATE ON PRIVACY. Names and addresses of publications, books, and advisors to help you learn more about financial privacy.

The Solution: Mark Skousen's Complete Guide to Financial Privacy.

Up to now, there has been no single source to guide you on the path to financial privacy.

But now, *Mark Skousen's Complete Guide to Financial Privacy,* offers concrete, "how to" advice on *how to hide your money* in every *legal* way possible.

Mark Skousen is well-qualified to write such a guidebook. He is the editor of *Personal Finance;* executive editor of its sister publication, *Tax Angles.* He has a Ph.D. in banking and monetary economics from George Washington University and is the author of several bestsellers, including *The Insider's Banking & Credit Almanac,* and *Playing the Price Controls Game.*

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Behold the Guardians of Tyranny

editorial

You've got to give some statists credit. Henry Fairlie, among them, has one of the finest noses, detecting even the most remote threat to their health and welfare. Writing in the *New Republic* (January 6, 1979), Fairlie decries some advances toward liberty as reactionary—"the rejection of the long teaching and experience of our civilization that it is only by concern, care and compassion for others that we may survive and progress as individuals and as societies."

What is the reaction he specifically has in mind? "The 1970s has not been a decade of conservatism. There might have been something to be said for this. [What? Why?] Rather it has been a Decade of Reaction, for which the preparation has been long and sedulous. We are being led by the conservative intellectuals, and they are leading themselves no less, into the garden of weeds and nettles that Ayn Rand helped to prepare for us. If that seems too vulgar, it must be said that one of the key conservative works [sic] of the 1970s, Robert Nozick's *Anarchy, State, and Utopia*, is no less vulgar in a radical libertarianism, as we are asked to consider it, that is really nothing but a self-indulgent permissiveness—which any true conservative should resist by instinct—speciously given the dignity of a moral system."

Mr. Fairlie probably composes his essays by instinct, since he commends that to others. And instinct would seem to guide him here—at least in the form that instinct can be conceived of in human affairs, as reliance on past habits and forms of thought regardless of reason, logic, and the facts of reality. For by such reliance, he has concocted a morass of innuendo, half-truth, fable, whimsy, and pseudo-poetics that he wishes to pass off as serious intellectual commentary on the state of our culture in our epoch.

Consider the passage just quoted from Mr. Fairlie's recent outpourings. If this decade is the scene of a reaction, what of it? A reaction here means wishing or attempting to turn things around, to return to earlier habits and practices. So understood, a reaction is not good or bad per se; it depends on what is to be revived. In the Soviet Union a reaction now would most likely be a hard-line Stalinist attitude. Senator Goldwater was called a reactionary in his 1964 presidential campaign because he wanted to reestablish certain principles of politics closer to what the Founding Fathers had in mind than to what the modern liberal welfare-statists envision as appropriate for a human community.

The reaction that Mr. Fairlie laments is the fact that—contrary to what his literary, philosophical, and political heroes have preached—many people, proud and humble, are tired of being the patsies of Mr. Fairlie & Company. The buzzwords *permissiveness* and *self-indulgence* are meant to condemn any such rejection of self-abnegation as a means of personal and social survival. To strive for a successful, healthy, prosperous, free life is to be self-indulgent. To seek a political climate in which various and sundry characters are prohibited from regimenting us for purposes of carrying out their version of "concern, care and compassion" (read: the welfare state) is considered an embracing of permissiveness.

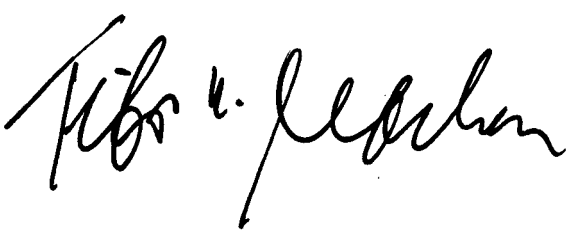
Poor Ayn Rand. She received no prominent recognition at all during the heyday of her philosophical and literary activities. She has been abused by conservatives and liberals alike. (Her philosophy isn't even respected much by contemporary libertarians such as Robert Nozick and Murray Rothbard, judging by what is said about her by these representatives of what Mr. Fairlie calls "the rip-off,. . .an honest description of the new libertarianism.") And now she is being credited with having laid the groundwork for what Mr. Fairlie finds distasteful (to his instincts) in our age.

I suspect there is a subtle, if subconscious, trick here. Mr. Fairlie is, apparently, going on the offensive. (That he feels the need to do so should encourage all individualists and libertarians, overt or latent.) He finds any hint of the death of altruism and collectivism such a fearful prospect that he is calling to arms all those with similar instincts. The strategy is clever. It was through complacency that those who wanted to live in a free society, pursuing their own happiness, lost the political and intellectual momentum. Mr. Fairlie apparently fears a similar complacency among the reigning collectivists, and to stem the reaction against his "long teaching and experience," he hopes to foster an alliance between left and right collectivists. These two factions have a lot to quarrel about, of course, but they have even more to lose if the libertarian alternative makes any headway at all.

Mr. Fairlie is disgusted that we "find ourselves electing people to office, then giving them no authority to govern us." What a preposterous assessment of our political circumstances. Only someone completely in accord with contemporary statist trends could articulate it—wishing, one must assume, for totalitarian governmental measures, in contrast to the present relatively confused, more or less petty although widespread tyranny of the various levels and arms of government. This preposterous assessment does give us a hint, though, about who is reacting to what, and what earlier state of affairs we are being asked to fully restore.

This is indeed the crucial point. There is now some minimal hope that, with the enormous failure of the politics of "concern, care and compassion for others," some advance can be made in the direction of the original radical alternative that the United States represents. The libertarianism Mr. Fairlie castigates as "barbarism" is the bona fide American political system, and if we work hard and are lucky enough we may see it, somewhere down the road, resurrected as the major revolutionary alternative to the many centuries of tyranny and semi-tyranny that have been mankind's "long teaching" and horrible "experience."

What Mr. Fairlie and others don't like about the libertarian drift of our culture—or the hint of it his sensitive nose has detected—is just what Madison observed almost 200 years ago, in *Federalist* 14. "Is it not the glory of the people of America, that, whilst they have paid a decent regard to the opinions of former times and other nations, they have not suffered a blind veneration for antiquity, for custom, or for names, to overrule the suggestion of their own good sense, the knowledge of their own situation, and the lessons of their own experience?"



letters

Taken for a Ride

I am certainly in basic agreement with one point of Robert Poole's recent Trends note [January]—that the funding and implementation of San Francisco's BART and Washington's Metro subway systems have been wasteful and downright immoral. Yet, I cannot side with Poole's pronounced reactionary attitude in condemning the technology of high-speed transit itself.

While Poole cites statistics compiled by the ACU Education and Research Institute allegedly showing that the real total cost of automobile (and bus) transportation is far lower than the real total cost of, say, a comparable BART ride, these statistics are not convincing. The true cost of the original (and usually quite illegitimate) acquisition of land for roads is apparently not calculated, although it is for BART. (The real value of the land on which roads exist is of course not just what was paid for it, but its present value, and includes the economic pressures to convert it to other uses.) Roads were constructed, by and large, in an era in which there were not high minimum wages, excessive unionization or excessive regulation—all intolerable interventions of the state. Not so for BART. A long history of price regulation has probably warped what would be the price of automobile fuel in a truly free economic system. The real cost of maintenance for roads is buried in a maze of city, county, state, and federal agencies and is difficult to determine, whereas BART's maintenance is a more accessible statistic.

So it would appear that a large part of the relative cheapness of automobile travel when compared to rapid transit is due to the extensive past (but concealed) government subsidization of travel by road, rather than the inherent inefficiency of rapid transit. The present inability of rapid transit systems to wean travelers from their cars is rational enough, given the present conditions. Yet the conditions exist only because the individual traveler is forced—and has long been forced—to subsidize heavily automobile transportation.

I, with Poole, condemn the *public* rapid transit systems as an incredible farce. However, I prefer not to blur this with an unhealthy hostility toward technological innovation itself ("progress," if you will). In private hands, and with real costs for alternative modes of unsubsidized transportation clarified, I prefer to think that in some urban settings we could indeed be whisked cleanly, quickly, and relatively cheaply, from one place to another in shining trains.

Randall R. Dipert
Fredonia, NY

Mr. Poole replies: As an ardent rail fan, I hope Mr. Dipert is right in his speculation that a full-cost analysis would show some forms of urban rail transit to be economically viable. To the best of my knowledge, however, no such analysis exists, though it might make an excellent thesis topic for graduate students in economics, engineering, or urban planning.—**R. P.**

Property Rights Research

Mr. Poole's article ["Is This Any Way to Run an Airway?" January] was very instructive, and it points to an important problem. It is still necessary to explore how property rights might be extended to the airways—as well as to the air we

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breathe, the waterways, the electromagnetic spectrum, etc. This seems like a good project for the libertarian think tanks. I know that a lot of foundation money is going to seminars on Austrian economics, human rights, and so on. But what about a long-range project to implement the idea of property rights where no precedents exist? The statists, of course, have a simple solution: the State owns the realm. By comparison, the laissez-faire solution is very complex, and it needs to be worked out with patience and care. And we can't any longer count on legal developments in the US for guidance in implementing or extending the principles of private property, since the judicial system rarely gives precedence to property rights these days. So maybe the new Reason Foundation should put research on property rights on the agenda.

Arnold Storechild
Baton Rouge, LA

Better Answers

Robert Poole's article concerning airsafety [January] and traffic control was extraordinary. I was most impressed by the depth of the article—from the historical background to the current conditions to the excellent manner and content in which reasonable alternatives were offered.

Up to several months ago, when the San Diego disaster occurred, this subject was not a high priority item on my list of interests. A certain incident occurred, ironically, just two days prior to that terrible event which changed my thinking.

I was handling the Los Angeles County Fair booth for the Libertarian Party of California, trying to coax as many hot, ill-tempered and apparently bored people as I could over to the booth when an elderly lady wandered over, cast a baleful eye at me and asked what libertarians would do about safety for aircraft and passengers without government control. That was the very first time I'd ever been asked that question, so I'm afraid I gave her a rather stock answer to the effect that airlines and owners of airports would have a vested, proprietary interest in the safety and comfort of their customers, and would undoubtedly do a much better job of it than the government could. Before I could go any further, she interrupted me by saying that we libertarians would go a lot further if we didn't talk so silly. Then she stalked off.

Needless to say, I wasn't very satisfied with that outcome or my part in it, and I wish I had read Mr. Poole's article prior to that. At any rate, I like the style and substance of the articles, and I believe libertarians desperately need more of this kind of writing if we are to successfully cut through the mythology of government's "proper role."

Edward Wolford
Culver City, CA

Sour Experience

Bruce Bartlett's article on the Hatchet Bay poultry plantation in the Bahamas [January] was indeed an "object lesson on socialism in practice," and an unfortunate symptom of the government's incongruous behavior since independence (1973).

Much more could have been written about the gross political mismanagement at the farm, in particular the difficulties suppliers have had obtaining payment. Last year, for example, a Bahamian boat loaded with supplies for Hatchet Bay was seized by the Port Admiralty Marshall in Miami until a $15,000 debt owed a Florida firm was settled.

Conditions have gotten so bad that the government's own health department inspector has warned the farm will have to close for health reasons if major repairs are not made. Among other items, he cited the high bacteria count in the milk,

(*Continued on p. 48.*)

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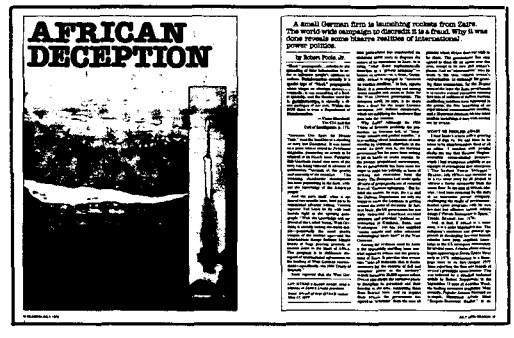
In this issue Editor Robert Poole, Jr., sorts through the facts about OTRAG—a private German company developing low-cost space boosters and launching them from Zaire—and uncovers curious contradictions in news stories aimed at discrediting the firm. Also in the issue: a native son analyzes Quebec's move toward separatism, and a psychologist advises scientists not to just ignore the claims of pseudoscientists. Plus the education of a president in the tricks of the Federal Reserve, a look at a successful comedy poking fun at Britain's national health service, a recommendation of books for children, and much more.



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brickbats

☐ **Bella Abzug** has lost yet another government job. After being frustrated by her latest firing—this termination at the bloody hands of Jimmy Carter, whom she had just attempted to "lecture" at the White House—Ms. Abzug declared: "The policy of government has not really caught up with the reality of women yet." It has, however, caught up with Ms. Abzug. In what must come close to a 20th-century record, the popular feminist has been bumped from the public dole in *two* House races, one Senate primary (a loss the polls blame on her one-time "scabbing" to break a public teachers' strike), and a mayoral race—all just since 1976. Her White House "86" brings the total to five setbacks in less than two and a half years. Little wonder Bella's outrage over "cutbacks in social programs" and "increased unemployment."

☐ **Speaking of records,** the hyperactive name-plate changers at the Phnom Penh city hall may be onto one themselves. When Cambodian "rebels" (a.k.a. North Vietnamese Army units heavily armed with U.S. Army leftovers) rolled into town earlier this year, it marked the second Communist liberation of the Southeast Asian paradise in only four years. This fact should please all the Marxist angels in heaven who are currently enjoying eyewitness accounts from some of the two million late Cambodians who formed such an integral part of the last consciousness-raising movement in the nation, which can now lay claim to title as the world's most heavily liberated Marxist mecca.

☐ **The intraparty squabble** in Cambodia has confused many sympathetic Americans who were really trying very hard to support the People's Revolution. Such dismay was surely confounded by the high-level United Nations debate between Cambodia's Prince Sihanouk and the Soviet Bloc. The People's Prince boasted that Chairman Mao had wasted five years of recruiting efforts on him without ever obtaining his party membership dues (or, insiders rumored, getting him to cancel his subscription to *American Opinion*). Sihanouk then humiliated the congregation by bellowing, as UPI reported: "'Fidel Castro has sold out to the Russians, but I have not sold out to the Chinese,' the rotund little prince told Cuban Ambassador Raoul Roa Kouri.

"'Cuban revolutionaries have not feared thermonuclear bombs,' the enranged Roa retorted. 'Why should they fear an upstart, pipsqueak prince?'"

And so goes the legacy of Marx and Engels.

☐ **Once the world peace-keeping** body got around to discussing the invasion of Cambodia, the government that had been attacked was scattered around various prison camps and graveyards and the new Soviet-North Vietnamese puppets showed up to represent the beleaguered bureaucrats. They claimed that the Pol Pot regime no longer existed (fast work, boys!) and that they therefore couldn't be much helped by the good ol' UN. This prompted the able Andrew Young, always on the alert for even the barest hint of Soviet expansionism, to declare, "I would be reluctant, if I were the Russians or the Vietnamese, to admit that a government no longer exists. It seems they know too much about it to be innocent about it."

☐ **The House Ethics Committee** has tried very, very hard and thought of everything it could, but the Koreagate investigation has closed up without gaining evidence of influence buying by South Korean operative Tongsun Park. It did find, of course, that Park gave $850,000 to House members in unreported cash payments while he was the purchasing agent for US rice shipments to Korea. And it was ascertained that, when Park was temporarily laid off in the recession of 1971, a $221,000 gift went from Mr. Park to Rep. Cornelius Gallagher (D-NJ). And it was finally determined that former Representative Gallagher, then chairman of a House subcommittee on Asian and Pacific affairs, at just this time personally requested of South Korean president Park Chung Hee that Tongsun Park be reinstated, which he was. Yet the committee just couldn't decide whether the $221,000 had influenced Gallagher's performance as a representative of the citizens or whether it was just a thoughtful gesture from a nice guy. The committee's report blamed "insufficient evidence." At least the public will have no similar problem in judging the ethics of the Ethics Committee.

☐ **Long-time libertarian activist** Jerry Brown, governor of California, has moved to endanger the public welfare by abolishing 15 essential "consumer affairs" agencies that license some 78,000 "professionals." The most imaginative regulatory hoax scheduled for decomposition would be the board that "licenses" tax preparers by means of a certification procedure that considers payment of a fee as the only "qualification." This scam was so transparent that even State Consumer Affairs Director John Meade could understand: "We haven't been certifying any level of competence in a lot of cases. In a sense you're misleading people by having a license on the wall." If Governor Brown, whose wall is covered with such certificates, gets his way, California consumers will be laid bare to assault by unscrupulous practitioners of shorthand reporting, landscape architecture, dry cleaning, social work (the poor always suffer in these things), cosmetology (so its about time the rich did as well), and professional wrestling. And don't tell your grandmother, but the cemetaries will also be set free to fleece.

☐ **Brother Billy,** often hailed as the brains of the Carter flock, has endeavored to straighten out troubled US foreign relations. Touring the USA with "some of the best friends I have," the Honorable First Brother escorted a high-level delegation from the Libya government, best known to American audiences as part-owners of the international terrorist syndicate. Billy's public statement, oft-quoted, was that the Libyans were worthy allies because "there's a hell of a lot more Arabians than there is Jews." In private, however, Billy went even further to make his ill-tempered guests feel at home, by hopping out of their chauffeured limo to empty his bladder against a "secluded" building wall. And even as the ground was wet, a *Penthouse* interview gave Brother Billy still more room to express himself. Most amusing was his psychohistorical assessment of the contributions of Charles Kirbo, claimed by President Carter as his most trusted advisor: "The dumbest bastard I've ever met in my life," analyzed the brightest Carter.

☐ **The Internal Revenue Service** has made it easier for you to converse with its auditing agents, or so it has attempted. It now forbids the use of tape recorders and stenographers during audit meetings, claiming that any actual record of the proceedings would hinder a "free exchange of information and opinions." That was "information" and "opinions."

—Thomas Winslow Hazlett

trends

Budget Balancing Comes of Age

"In the past 12 years, leaders of both parties have tried in vain to slow [inflation's] reckless course. At the same time, states compete with each other to extract more and more federal grants that are financed out of the deficits and not the productivity of the nation. It is therefore right that these same states join together to demand a constitutional amendment that will serve as the occasion for finally restraining the inflationary spending of the federal government."

That was how California governor Jerry Brown phrased his endorsement of the National Taxpayers Union's constitutional amendment to require a balanced federal budget. At the time of Brown's speech, 22 state legislatures had called for a convention to write such an amendment. In the subsequent month, Arkansas, Idaho, North Carolina, South Dakota, and Utah joined the list and at press time, in three other states (California, Indiana, and Iowa) one house had endorsed the move. If the other house in those three states concurs, that would bring the total to 30 states, just four short of the necessary two-thirds required.

Reaction to Brown's "heresy" was swift. President Carter, Sen. Edward Kennedy, and other liberals condemned the idea of such a constitutional convention, Carter calling it "extremely dangerous" and "completely uncontrollable." Brown lashed back sharply at Carter and the other critics, saying that the opposition "reminds me of scare tactics and the rhetoric that I heard during the Proposition 13 campaign." And Brown pointed out that the most likely scenario is that the specter of such a convention would force Congress itself to enact a constitutional amendment. "If they take action and balance the budget and give us an amendment, fine. Then maybe the convention won't occur. If they don't take action, then the states of this country will call for a convention to balance the budget."

The president of the National Conference of State Legislatures—Oregon state senator Jason Boe—predicts that the necessary 34 state resolutions will be in hand by June or July. "It's time Congress recognized this thing is coming at them like a 100-car freight train and they haven't done a thing about it." Added Jim Davidson, chairman of the NTU, "There is no question in my mind whatsoever that the necessary additional states will adopt this resolution in this legislative year."

Perhaps in an effort to head off passage of the balanced-budget amendment, President Carter resurrected his near-forgotten commitment to a balanced budget by the end of his fourth year in office. An administration official told the *Los Angeles Times* that Carter is projecting a small surplus for the fiscal year starting October 1, 1980—despite an unprecedented $29 billion deficit for the coming fiscal year, four years into an economic recovery.

Private Building Codes

Yet another government-appointed commission has lived off the taxpayers for a year and produced yet another volume of findings. This one was the National Commission on Neighborhoods. As with most such bodies, being appointed and paid by the State, it found little to object to, in principle, in the decades of State meddling that have destroyed viable neighborhoods. But unlike most government commissions, this one included a dedicated antistatist, and he managed to sell the group on one powerful idea. His name is John McClaughry, and his cause was the unviability of building codes.

Indeed, thanks to McClaughry's research, the commission became convinced that there is no evidence that the traditional building code system has *any* identifiable benefit in protecting the public health and safety—and at the same time that it frustrates and inflates the costs of both new construction and rehabilitation. The commission is therefore recommending that the present system be scrapped, to be replaced over a period of years by voluntary standards akin to those existing in France.

France, McClaughry learned, has never had an equivalent of the US code-enforcement system (except for fire-safety regulations in public-access buildings). The key elements of the voluntary French system are (1) an elaborate body of codes and standards developed jointly by designers, manufacturers, and public officials and (2) strict liability of builders to purchasers for the quality of construction. For main structural components, the builder remains liable for 10 years; for secondary components (such as windows), he remains liable for 2 years.

To protect themselves against claims, most builders purchase warranty insurance. The insurance company hires one of several inspection firms to make inspections during construction to ensure that the building meets the applicable national standards. Banks will usually not make mortgage loans unless the builder has warranty insurance, nor will casualty in-

surers write policies unless the building has passed the inspections.

Thus, the voluntary system is neatly self-enforcing, while avoiding compulsion of those who really want to opt out (rehabilitators, small owner-builders, design innovators.) As such, it is far more flexible—and more just—than the rigid, compulsory US code-enforcement system. Moreover, since it is private, it is paid for by the users rather than being yet another burden on the taxpayers. The commission is to be commended for bringing this welcome alternative to light.

Speed Limits Start to Crumble

The revolt against Washington is manifesting itself in yet another way—overturning the federally imposed 55 mph speed limit. After several years of widespread individual defiance of the law, state legislatures in western states are in the process of repealing it, despite threats of cutoff of federal highway aid.

First to act was the Wyoming legislature. Its Senate voted 20 to 10 to raise that state's limit to 65 mph. At press time, House action was pending, in the face of a threat by the feds to cut off some $50 million in highway aid. And similar bills had been introduced or announced by legislators in 13 other states. In New Mexico a bill has been introduced that would leave intact the 55 mph limit but replace speeding tickets with a flat $5 penality for "excessive use of energy" for anyone caught driving over the limit.

The sponsor of the Wyoming bill, Sen. Cal Taggart, stated that "Washington doesn't understand" that the 55 mph limit is inappropriate in the wide open spaces. Added Sen. Dick Sadler: "It's time to start telling the feds where to go. If this state has the guts to stand up to them, maybe other states will join us." The Colorado bill's sponsor voiced similar sentiments. "If just one state makes a stand...the feds will choke them out," said Rep. Bob Stephenson. "If a lot of states say enought is enough, the feds wouldn't dare cut everyone off."

Limiting the Federal Government

The 96th Congress had barely convened when a number of bills were introduced to reduce or restrict the federal government. That in itself is not new; what is news is that these proposals seem to be picking up considerable support.

Sen. William Roth and Rep. Jack Kemp checked in with a new version of their tax-cut plan. Kemp-Roth II would reduce federal taxes by $180.9 billion and individual income tax rates by 30 percent, over a three-year period. The top rate would fall from 70 to 50 percent and the bottom rate from 14 to 10 percent. In addition, the bill would index the tax system to prevent people from being forced into higher tax brackets by inflation. A companion bill would limit federal spending to 21 percent of GNP in 1980, 20 percent in 1981, 19 percent in 1982, and 18 percent in 1983. That would hold federal spending increases below seven percent a year, compared with double that amount in recent years, said Roth.

The congressional version of the balanced-budget constitutional amendment was reintroduced as the session began. By the Congress's second day, it had picked up over a quarter of the members of both houses as sponsors.

Joining the parade for limits on government was the Senate Governmental Affairs Committee. It issued its final report on a two-year study of federal legislation, calling for regulatory agencies to be required to conduct economic impact analyses before issuing new regulations. The impact statements would tally up costs as well as benefits. An appendix to the report contains a study by two Harvard professors recommending that the

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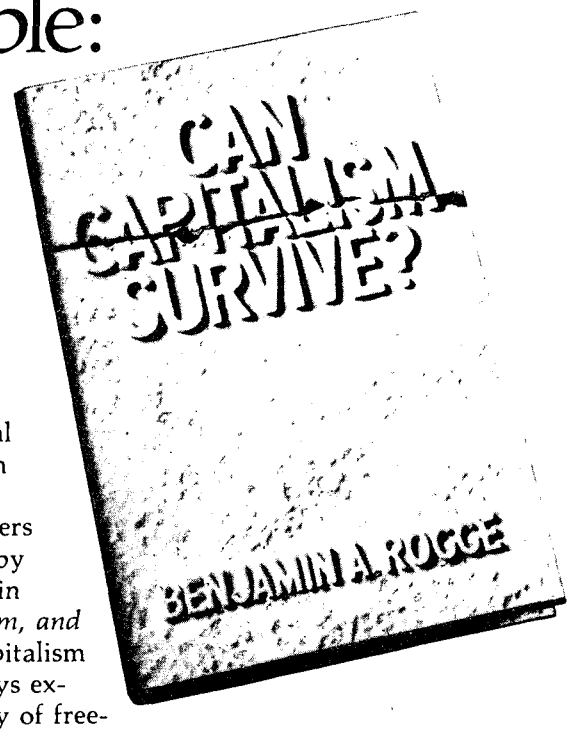

Can Capitalism Survive?
By Benjamin A. Rogge

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government abandon its efforts to set job-safety standards (as does OSHA) and instead try to create economic incentives to make workplaces safer.

Bank Privacy Gains

The privacy of the bank/customer relationship suffered a major blow when the Supreme Court ruled in 1976 that bank records are not "a man's private papers" and therefore not protected by the Fourth Amendment from unreasonable search and seizures. But what the Court proposed, Congress has now disposed. The Bank Control Act of 1978, passed in the closing minutes of the 95th Congress, includes Title XI, which provides that "no government authority may have access to or obtain copies of the information contained in the financial records of any customer from a financial institution" without following strict new procedures.

Under these new procedures, before the IRS, DEA, or any other government agency can examine your bank records, it must advise you of an administrative subpoena and give you 10 days in which to take the matter to court. The court, of course, may approve the search if probable cause is established. But the new requirements ought to go a long way toward curbing the kinds of fishing expeditions that have become common in the last two years.

Meanwhile, sales of bright red checks impervious to microfilming continue to boom. Jim M. Blackley's Liberty Graphics in Charlotte, North Carolina, was recently the subject of an article in *American Banker.* Blackley recounted the efforts of federal agencies—including the Federal Reserve Board, the Federal Deposit Insurance Corp., and the Comptroller of the Currency—to discourage banks from accepting the checks. But as Blackley is quick to point out, the checks are not illegal, and most banks—including North Carolina's two largest—do accept them. Do the banks actually have a way to duplicate red checks? Nobody is saying, which would imply that the answer is no.

Cancer Revisionism

The last few years have witnessed a major escalation in alarm about cancer. Every few months a new study, report, or article appears indicting yet another substance as carcinogenic. The impression is growing that we can live in a soup of cancer-causing pollutants and industrial chemicals and that cancer is becoming an epidemic.

To shed some objective light on subjects such as this, a Harvard researcher named Elizabeth Whelan last year joined forces with a number of other respected researchers (including Dr. Norman E. Borlaug, Dr. Thomas H. Jukes, and Dr. Frederick J. Stare) to found the American Council on Science and Health. The aim of the group (which accepts no corporate funding) is to "promote scientifically balanced evaluations of chemicals, the environment, and human health." ACSH has just issued its first two reports, both dealing with the cancer scare. They do their job of debunking emotional rhetoric with calm presentations of fact.

The first is titled "Cancer in the United States: Is There an Epidemic?" In a word, the answer is no. Using all available statistics, the report shows that the overall cancer *incidence* rate in the United States has been declining since 1947; the only form of cancer that has been increasing significantly for the whole population is lung cancer. The same is true of cancer *death* rates. For reasons which aren't clear, a few individual rates of incidence and death—for specific population subgroups and organs—are going up (prostate cancer in black males, for example), but overall most trends are downward.

How about the widely quoted claim that "80 to 90 percent of all cancers are environmentally induced?" The report identifies the source of this assertion—the International Agency for Research in Cancer, in Lyon, France. But it explains that this estimate was derived by comparing the high and low cancer death rates around the world and finding that since they varied so widely, some aspects of people's overall environment—rather than simply their being human—must account for such variations. The fact is that the majority of *known* causes contributing to the 80 to 90 percent are *cultural* rather than industrial in origin—such as smoking, drinking, and exposure to sunlight. Although much remains to be discovered, it is by no means clear at this point that workplace hazards or industrial pollution figure significantly in cancer causation.

The second report, "New Jersey: Garden State or Cancer Alley," deals with recent alarm over a National Cancer Institute report that found New Jersey to have the highest cancer death rate in the country from 1950 through 1969. Since that state has a high concentration of chemical industries, many people concluded that a cause/effect relationship exists. The report puts the cancer death rate figures in perspective, pointing out first of all that New Jersey ranks first only for white males; for white females, nonwhite males, and nonwhite females it ranks second, sixth, and fifth respectively. Furthermore, although New Jersey's white male cancer death rate of 205 per 100,000 population is high, many large cities and counties have even higher rates: Baltimore's is 233, Philadelphia's is 221, New York City's is 215, and San Francisco's is 206. By comparison, the national average is 174 deaths per 100,000.

The report also raises questions about the link between air pollution and cancer, pointing out that although lung cancer death rates are higher in urban areas, this is true *only* for males, not females. This suggests that factors such as cigarette smoking—which occurs more frequently for males—may be more of a causative factor. The report also finds that of the three types of cancer most likely to be caused by industrial by-products—lung cancer, bladder cancer, and leukemia—only bladder cancer death rates are higher in New Jersey.

Thus, the report concludes, "cancer mortality patterns in New Jersey are similar to those of other urban areas.... There is no evidence to support the proposal that New Jersey needs a unique program of cancer control or prevention."

Road/Rail Deregulation Progress

Late last year Transportation Secretary Brock Adams reported that the administration was preparing for a truck deregulation battle that would make the 1978 airline deregulation fight seem like a picnic. The companion rail deregulation measure Adams expected would have easier going—but would still be a battle. "We will start with the railroad industry," he announced, "not by choice but by necessity. That industry is sinking rapidly and we've got to free it from a lot of that regulation and let it try to adapt to the modern economics of the country."

Besides preparing draft deregulation legislation, soon to be introduced, Adams is attempting to keep his own house in order. At the end of January he announced the elimination of 40 percent of Amtrak's passenger-route miles—including some of the system's biggest money losers. (The Floridian, for example, between Chicago and Florida, loses $105.55 per passenger, according to a study by the General Accounting Office. Overall, GAO found that 11 of Amtrak's routes are so lightly traveled that they are actually less fuel-efficient than automobile travel. The average loss for the 11 routes was $64.16 per passenger—a total 1977 loss of over $10 million.) The cuts will be final in May unless blocked by Congress.

Meantime, the Interstate Commerce Commission continues its efforts to deregulate piecemeal, in an effort to stave

off abolition by Congress (as has happened to the Civil Aeronautics Board). In recent weeks the ICC has issued tentative rule changes that would (1) eliminate regulation of fresh fruits and vegetables moving by rail (raw agricultural products already are exempt when moving by truck), (2) abolish its control over the portion of inland and coastal waterway traffic that it regulates, and (3) shift the burden of proof on the need for new service from truckers seeking to enter the field to those already in business who seek to prevent the new service.

Commission member George M. Stafford, sounding very much like Alfred Kahn, told the Contract Carrier Conference that "free entry is clearly the wave of the future" and that "if free entry is coming, then let it come all at once and let it come now. The ball has begun rolling and it is gathering speed and momentum. There seems to be no one with the power or the inclination to stop the deregulation bandwagon. So, why don't we all just climb aboard?" Two key congressmen apparently decided to do just that in January. Reps. Harold Johnson and James Howard, who had objected strenuously to ICC chairman O'Neal's deregulation efforts a month before, issued a statement saying that they basically agree with his view that the agency must adopt some new regulatory policies on its own.

Thus far the only legislation actually introduced is Sen. Edward Kennedy's bill to abolish the antitrust immunity now granted to trucking rate bureaus to enable them to fix prices. The administration's rail and truck deregulation bills are expected to be put into the hopper sometime in March.

Private Fire Departments Catch On

As the tax revolt reverberates across the country, wise local officials are seeking out ways to deliver public services at less cost. Last November 5, CBS-TV's "60 Minutes" showed how Scottsdale, Arizona, obtains fire protection under contract from a private firm, at half the per capita cost of comparable protection in neighboring cities (see "Fighting Fires for Profit," REASON, May 1976). The fact that it is a private firm that has to compete for the business has forced the company, Rural/Metro Fire Department, Inc., to develop more efficient methods.

And now it looks as if the private fire department concept is catching fire across the country. On January 1 the residents of Elk Grove Township, a Chicago suburb adjacent to O'Hare Airport began receiving fire protection from American Emergency Services Corp., a new company modeled after Rural/Metro. Headed by an experienced fire fighter/engineer/businessman, Gary Jensen, the firm is providing full-fledged fire and paramedic services to the unincorporated community. Because of the large numbers of office buildings (including the United Airlines headquarters) and industrial plants in the township, the average daily population is around 20,000. On that basis, the annual contract price of $300,000 works out to be $15 per capita (compared to about $10 per capita in largely residential Scottsdale).

Rural/Metro itself is not resting on its laurels. After expanding several years ago into Tennessee, the firm recently signed its first contract in Georgia. The Hall County Commission has abolished the county-operated fire department, contracting instead with Rural/Metro for $862,000—a move the commission said would save at least $100,000 a year. The Georgia State Fireman's Association (union) has vowed to fight the move.

Another local government that is talking to Rural/Metro is Rochester, New York. That city is under a court order to cut $32 million from its budget to remain within a state constitutional tax ceiling. In this case the city is talking, not about *hiring* the company (in which case it would

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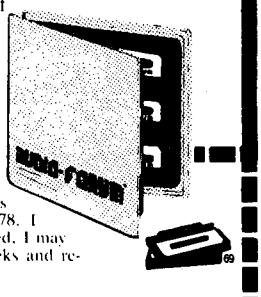

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still collect taxes to pay for the service), but about franchising it to operate in the city, charging those who subscribe an annual fee for fire protection service. (Rural/Metro operates on a subscriber basis in a number of Arizona communities other than Scottsdale, as do other private fire departments in Oregon, Montana, Tennessee, and Georgia. When nonsubscribers request service, they are billed on an hourly basis—costing considerably more than the annual subscription fee.) Eliminating the fire department from the city budget would save Rochester $18.5 million a year in taxes.

Companies Strike Back

Quite a few corporations are no longer lying back and letting government regulators have their way with them. Instead, they are fighting back in the courts, often turning the State's own weapons against it.

A case in point is Sears, Roebuck & Co., the nation's largest retailer. In April 1977 the Equal Employment Opportunity Commission voted two to one that Sears was discriminating against blacks, women, and the Spanish-surnamed on the basis of race, sex, and national origin. Sears contends that it is not discriminating and objects to such restrictions as the new law preventing firms from requiring retirement at age 65—thereby making fewer openings available for upwardly mobile women and minorities.

Consequently, Sears has filed a class-action suit against 10 federal agencies, on behalf of itself and all other US retailers with 15 or more employees. The suit alleges that a tangle of conflicting rules, regulations, policies, and laws has "created an unbalanced civilian work force which restricts employment opportunities of American citizens." The suit asks the government to put its own house in order before trying to tell businesses how to run theirs. It claims that such actions as the government's failure to enforce school desegregation, failure to eliminate discrimination in its own work force, preferential treatment of veterans, and restrictions on the number of women and blacks in the armed forces have created a work force dominated by while males.

Other firms are becoming more militant in resisting the demands of inspectors from the Occupational Safety and Health Administration and the Environmental Protection Agency. Dow Chemical refused entry to an EPA team that wanted to photograph a power plant at the firm's Midland, Michigan, chemical complex, telling them to obtain a warrant. Instead, EPA chartered a plane and took aerial photos—and Dow sued, alleging invasion of privacy, unreasonable search, and denial of due process. The company says trade secrets could be revealed by the photos and has won an injunction impounding them until the case is settled.

Another firm that tangled with EPA is Polaroid. Under the Toxic Substances Control Act, EPA ordered the company to turn over data on 20 secret substances it uses in producing its instant-developing film. Polaroid sued, arguing it was denied due process because EPA regulations allowed the data to be shared with other agencies and Congress, as well as the courts. After EPA modified its rules, Polaroid dropped the suit.

Companies continue to resist OSHA inspectors in the wake of last year's Supreme Court decision that search warrants are required if the business otherwise refuses entry. The Burlington Northern Railroad has won court rulings limiting OSHA inspections solely to cases involving a specific accident or complaint. In November the US Fifth Circuit Court ruled that Congress has not granted the secretary of Labor the power to bring suits to compel businesses to submit to OSHA inspections. According to Rep. George Hansen, the implication is that OSHA agents cannot inspect without the owner's

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consent. If upheld on appeal, the ruling could force OSHA to request new authority from Congress—which may be reluctant to grant it, given today's antigovernment mood and the fact that a bill by Rep. Steve Symms to abolish the agency is pending.

In an effort to head off further attacks, OSHA announced in December that it is eliminating 2,400 "nit-picking" fire-safety rules. The 400 pages of regulations will be replaced by just 10 pages. The move is the second phase in the agency's simplification campaign; in November it axed 928 other nit-picking rules. Whether such efforts will ensure OSHA's survival is difficult to gauge.

The Not-So-Red East

The liberalization of China's once-red regime continues. Late in January the official China news agency Hsinhua announced that the money and property confiscated from former capitalists during the Great Proletarian Cultural Revolution will be returned. Former businessmen and industrialists, termed "national bourgeoisie," will "recover huge sums in bank deposits and property" that were confiscated between 1966 and 1969, the agency stated.

Most large Chinese businesses were nationalized in 1956, and as compensation the "national bourgeoisie" were paid five percent interest per year on the value of their seized capital. Some were also paid high salaries to continue in technical and managerial positions. But during the Cultural Revolution, Red Guard gangs ransacked their homes and confiscated their valuables and bank accounts.

All that will supposedly be reversed, now that the "Four Modernizations" drive is underway. Politburo member Ulanfu, from Inner Mongolia, announced the restoration of property at a Peking meeting attended by "some 200 of the largest capitalists and leading members of democratic parties," according to the news agency.

Meanwhile, Chinese Vice-Premier Teng Hsiao-p'ing, on his visit to the United States, repeated his promise that Taiwan could retain its army, political autonomy, and separate economic system after reunification with China. The main requirement would be for Taiwan to fly the Chinese flag and acknowledge the Peking government's sovereignty.

At press time, the Taiwanese were having none of it. Uncertain regarding vague US promises of further sales of defensive weaponry and bitter over US denial of earlier requests to buy F-5G, F-16, or F-18 fighters and Harpoon and Sidewinder missiles, the Taiwanese turned to Israel. They have already purchased two types of Israeli missiles—the Gabriel ship defense missile and the Shafrir air-to-air missile. Israel Aircraft Industries is now offering to supply its Kfir-C fighter, a derivative of the French Mirage series. And the Taiwanese may well take them up on the offer.

Milestones

•*OTRAG Update*—The private firm developing low-cost satellite launchers from a controversial base in Zaire has opened its operations to international inspection. The firm, Orbital Transport and Raketen-Atkien Gesellschaft (OTRAG), has invited the United Nations to provide continuous supervision of "its total transport activities in Zaire." It has authorized Prof. Martin Loeffler, member of the presidency of the German Society of the United Nations, to enter negotiations with the UN and to keep the West German government informed of its activities via regular briefings.

—Robert Poole, Jr.

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editorial introduction

THERE'S A NEW AGE DAWNING

The world is no more closed than it is flat.
—Dr. Krafft Ehricke

We've just about used up this planet; time to go find another one.
—Robert A. Heinlein

The 1970s were the years of limits to growth, of ecological pessimism, of doomsday printouts. The experts of the Club of Rome and their transmission belt of liberal environmentalists managed to convince many of us that earth is running out of resources, strangling on its own effluents, and being inundated by too many people—with the only solution to accept new forms of government control.

The realization that these speculations were wrong has dawned slowly, but it is finally beginning to penetrate into the recesses of our culture. In the first place, in making their projections the doomsday theorists vastly underestimated the role of invention and innovation; moreover, they generally ignored the way that free markets can cope with shortages by rationing out dwindling supplies and making it profitable to develop substitutes.

But the most exciting news, as Peter Vajk points out in this issue, is that even if the doomsayers *had* been right, mankind still has a magnificent way out. For the 1980s will mark the dawning of the age of space industrialization—the time when man can start living in, working in, and exploiting outer space. The implications of this move are so profound that science writer G. Harry Stine has coined the term "the third industrial revolution" to describe it.

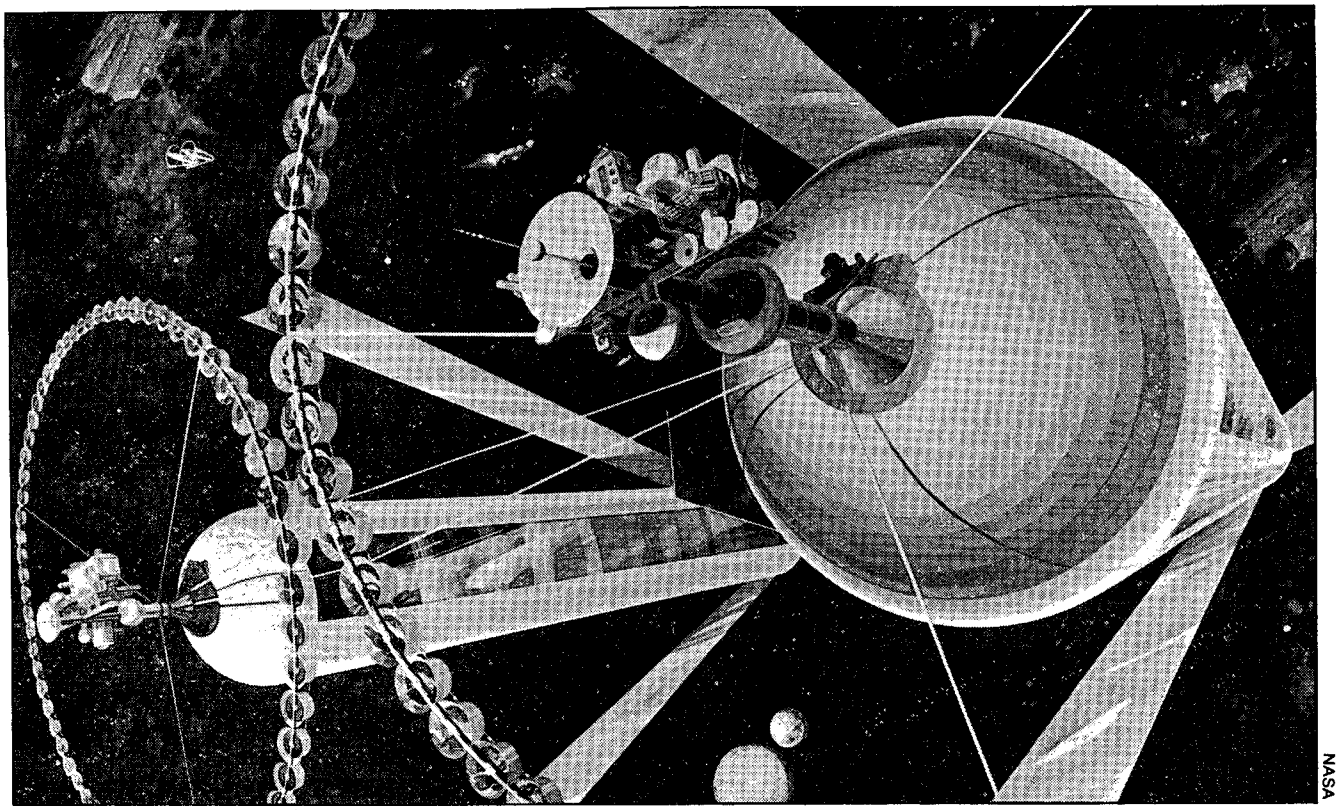
Up till now space has been a realm solely for exploration. One-of-a-kind, virtually hand-made rockets have put a few men and some equipment into orbit for short periods at a cost of up to several thousand dollars per pound. Even with the Apollo/Saturn system the cost was nearly $1,000 a pound, in today's dollars. But the new *reusable* Space Shuttle to be launched this fall will cut that cost to around $250. A more advanced version, with *both* stages reusable, will cut the cost to $100-$150 per pound. And more advanced design heavy-lift launchers, now on the drawing boards, could cut the cost to $50—using technology that already exists! With launch costs this low, it will be economically feasible to move from *exploration* to *exploitation* of space.

And what is there to exploit? Initially, small-scale space manufacturing is likely to concentrate on taking advantage of the unique physical properties of outer space—zero gravity, vacuum, absolute zero temperature—to make products that can be produced nowhere else. Fairly substantial markets appear to exist for a variety of space-produced semiconductor materials, optical products, vaccines and other biologicals, and unique metallurgical products such as superconductors and perfect ball bearings. Studies by General Electric, McDonnell-Douglas, TRW, and Science Applications, Inc., have estimated markets of up to several billion dollars a year for such items.

The next move is likely to involve space mining. Studies of moon rocks and remote sensing of the lunar surface indicate significant quantities of metal ores, including titanium. Spectral analysis of asteroids, confirmed by sampling of meteorites, indicates high quantities of iron and nickel. Calculations by two MIT professors indicate that a large-scale space mining operation could supply all the world's nickel and half its iron—without pollution and at a profit.

The ready availability of metals in space will make possible the construction, in orbit, of large-scale space factories and habitats, without the expense of lifting all the material from earth. Virtually limitless solar energy is available, undiffused by earth's atmosphere, all the time. These considerations have led Princeton physicist Gerard O'Neill to develop designs for permanent space colonies. Among the economic rationales for such colonies is the construction and operation of massive solar power satellites, selling energy to earth.

Notice the common denominator in all of these examples: *profit.* Throughout the '70s we grew accustomed to thinking of outer space as theater. The Apollo landings, the Viking Mars missions, planetary fly-bys—all were interesting entertainment, both for the TV-watching public and the publicly sup-



NASA

ported scientists who designed the on-board experiments. But the scientists and engineers planning the space projects of the '80s speak the language of the entrepreneur—rates of return, payback periods, cost per pound—as well as that of the technologist.

Commercialization is already well advanced for several types of earth satellites. The communications satellite industry is a thriving commercial venture that has already lowered the cost of long-distance voice, data, and video communications and is poised to open up many new types of services (including Dick Tracy-style wrist radios offering worldwide range—probably within 10 years). The remote-sensing business is well on the way toward duplicating the process, building on the success of NASA's Landsat as a device for mineral prospecting, mapping, and the like.

What we're seeing, in short, is the beginning of a historic transfer of space operations from the public to the private sector. To be sure, NASA is not about to just close up shop and go home, nor are aerospace firms going to tell Washington tomorrow morning that they can get along fine without the taxpayers funding their space R&D for them. But there are some provocative straws in the wind.

The same Science Applications study that reported major markets for space industrialization recommended that NASA phase itself out of operating the Space Shuttle, turning that over to private enterprise to be operated commercially, like an airline. Soon thereafter, reports began to circulate through the aerospace community that Boeing is interested in taking over Shuttle operations—not just contracting to run it, but actually acquiring ownership.

Last year we reported in these pages on the operations of an innovative West German firm, OTRAG, that is developing, without tax money, a low-cost booster rocket from off-the-shelf components (REASON, July 1978). Despite financial and political difficulties, the firm made two more tests of single-stage rockets in 1978 and plans tests of two-stage rockets this year, according to the Space Information Center in Belgium. If all goes well, 1980 will see the first orbital mission, with a three-stage booster.

Elsewhere in this issue we report on the progress of the Space Freeport Project—a completely private, international effort to develop one or more nongovernmental launch sites, open to all peaceful users, both commercial and governmental. The considerable interest shown in this project provides yet another indication of the growing awareness of the commercial potential of space operations.

Even popular culture is picking up the trend. Witness the success of the new TV show Salvage I, whose pilot episode was about a private mission to the moon to salvage discarded NASA hardware—at a profit!

That the transition to private enterprise has begun can also be gleaned from several recent Washington developments. For one thing, NASA has confirmed its interest in privatizing the Shuttle. Last fall a NASA official connected with the Shuttle program, Chester Lee, told the *Los Angeles Times* that operating a space transportation system is not compatible with the agency's charter or its desire to remain an R&D organization.

A month later when President Carter released his detailed statement of space policy for the next decade, it included not a single new proposal for major space projects—no new Apollo or Shuttle-style commitments. Clearly, if space factories or solar power satellites or space colonies are to be built, it's going to have to be private industry that builds them.

Finally, the December issue of *Government Executive* carried a two-page article on the future of the US space program. Raising the question of whether it's now time for the government's role to wind down, the article devoted nearly half its length to discussing an earlier version of this writer's article (p. 24 of this issue) on why further government involvement in space exploitation is unwise. Taking this message mostly to heart, it urged that the government avoid creating a space version of the Interstate Commerce Commission.

Times *are* changing. In this special issue we hope to give you a better understanding of the whys and wherefores of the coming age of space.

—R. P.

NO MORE DOOMSDAY

"Limits to growth" is a myth—but there are still plenty of good reasons for going into space.

by J. Peter Vajk

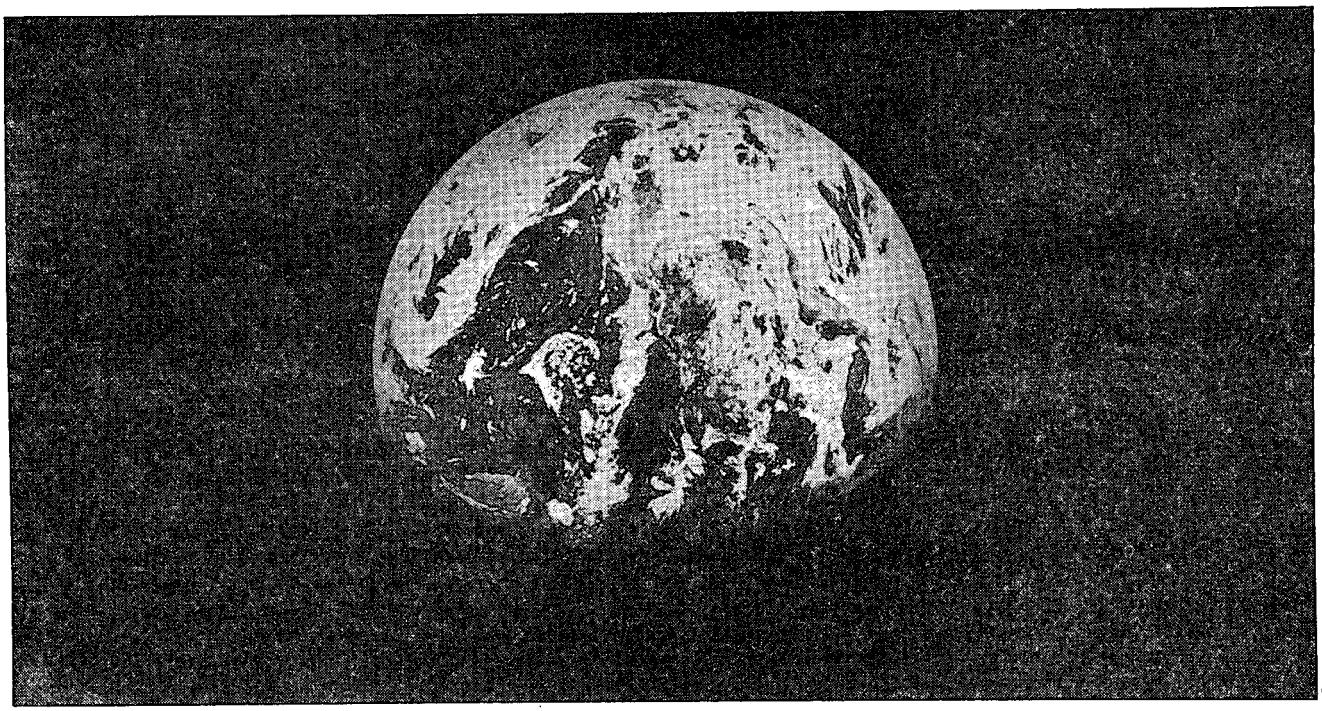
THE SPACE AGE is commonly thought to have begun in October 1957, when the Soviet Union launched the first artificial satellite of the earth as part of the International Geophysical Year. Yet the following decade of space exploration by both the Soviet Union and the United States had little effect on the average person's understanding of the world in which we live—until the flight of Apollo 8 in December 1968. Prior to that mission, no one had ever thought to send a camera deep into space and turn it *back* to look at the *whole* planet earth in a single picture. The pictures taken during that mission finally propelled the modern world into the Space Age, for our ways of thinking about the world were drastically and irreversibly changed.

Two long-standing issues in the industrialized world were sharply affected by the wide circulation of the Apollo pictures. One was environmental damage from human activities, especially from industrial and agricultural pollutants. These issues had been addressed by such books as Fairfield Osborn's *Our Plundered Planet* (1948) and Rachel Carson's *Silent Spring* (1962). The other issue was the question just how many people the earth can support, especially if we all want to enjoy the material affluence of the industrialized nations. This question had been raised by Thomas Robert Malthus at the end of the 18th century; during the 1950s and '60s it had been discussed mostly by such groups as Planned Parenthood and was the subject of a few books such as William and Paul Paddock's *Famine 1975* (1967) and the first edition of Paul R. Ehrlich's *The Population Bomb* (1968).

But none of this had had any significant impact on the average man or woman in the street in the industrialized countries, until the Apollo 8 pictures brought back vivid and convincing proof that the biosphere of the earth is a single, integrated, and interdependent system in which the use of pesticides in Kansas can indeed affect the fertility of penguins in Antarctica. In the context of the vast scales of the lifeless universe surrounding the earth, the biosphere looked very fragile and delicate. Almost overnight, the ecology/environment movement became a powerful political force. The environmentalists quickly adopted Buckminster Fuller's phrase "Spaceship Earth" as a reminder that the survival of humanity depends on the health of the biosphere just as much as the survival of the astronauts depended on the proper functioning of Apollo's life-support systems.

The 1970s have been marked in the United States by a high degree of environmentalist activism, beginning with the creation of the Environmental Protection Agency and the passage of the Clean Air Act in 1970. The American SST program was killed, in part, because of concern about the effects its exhaust emissions might have on the ozone layer. Environmental Impact Statements became a necessary part of planning major construction projects, often resulting in extensive court battles. The movement to prevent further deployment of nuclear power plants achieved some significant successes. Fluorocarbon propellants have been banned from aerosol products; lead additives have been banned from use in new cars; and DDT is no longer generally available. The issue of environmental damage by human activities obviously became popularized and politicized.

While the other issue has never reached such a wide audience, it has continued to be debated in the halls of academe, in some governmental offices, and in dedicated circles among the environmentalists. In part, the narrow interest in the



Boeing

long-term survival of humanity is due precisely to the long time scales involved, ranging from a few decades to centuries or more. The more predominant and pessimistic side of this debate is represented by a stream of thinking that can be referred to as the "Doomsday Mystique." It has become accepted as part of the conventional wisdom of the present age by most people in the circles mentioned above.

The Doomsday Mystique has been most completely embodied in *The Limits to Growth* (1972), the Club of Rome's report describing the results of a pessimistic computer projection for the global socioeconomic system to the end of the next century. This report, which has since sold several million copies worldwide, projected a catastrophic collapse of industrialized civilization around the world in the next 50 to 80 years due to exhaustion of mineral resources, escalating pollution levels, and massive famine due to overpopulation. Its conclusion was that the only escape is to abandon standard industrialized consumption patterns, recycle everything, and institute stringent worldwide population controls. Similar themes may be found in the current literature of most environmentalist action groups and various organizations promoting zero population growth.

The Doomsday Mystique can be characterized by a set of beliefs about the world that have become so unquestionably accepted by its adherents as to have the strength of axioms. These axioms of the conventional wisdom of our age are:

- World food production is already at its limits. Increased production must necessarily create major ecological dislocations and damage.
- Pollution of the environment increases directly as the number of people increases and much faster as wealth per person increases.
- Reducing famine (by increasing food per person) will accelerate population growth, compounding the global problem.
- Birth rates can be reduced only by universal access to birth control technologies, with thorough education on the necessity and methods of use.
- Nonrenewable resources (especially for energy) will be depleted very soon (in no more than a few decades).

But more careful analyses of these points have emerged in the last few years, suggesting that these axioms are, at best, grievous oversimplifications.

FOOD FOR ALL

Perhaps the best currently available analysis of global food production is a book by Frances Moore Lappé and Joseph Collins, *Food First!* (Houghton-Mifflin, 1977). No country on earth today, they show, is so lacking in necessary resources that it could not feed itself abundantly *provided* certain social, legal, and political arrangements are changed. With the necessary changes, food production can increase far more rapidly than through expansion of cultivated acreage or through technological changes in agricultural methods. Bangladesh, for example, now has cultivated acreage per person twice that of Taiwan; yet no one is starving in Taiwan, while Bangladesh is considered one of the most impoverished and famine-stricken countries in the world. The same comparison holds for India and China.

How has starvation been banished from China, Taiwan, and South Korea, to name a few countries in which it was endemic 25 years ago? Basically, through changing patterns of land ownership. Farms owned and operated by families or small cooperatives are far more productive, acre for acre, than giant farms using mechanized agriculture, expensive fertilizers and pesticides, and improved seeds. Small farmers in Argentina, Brazil, Chile, Colombia, Ecuador, and Guatemala have been shown to produce from 3 to 14 times as much per acre as do large farmers. The small farmer obtains these results by substituting immense quantities of hard labor for the technological inputs he cannot afford, by planting closer together than machines would, and by interplanting and rotating complementary crops.

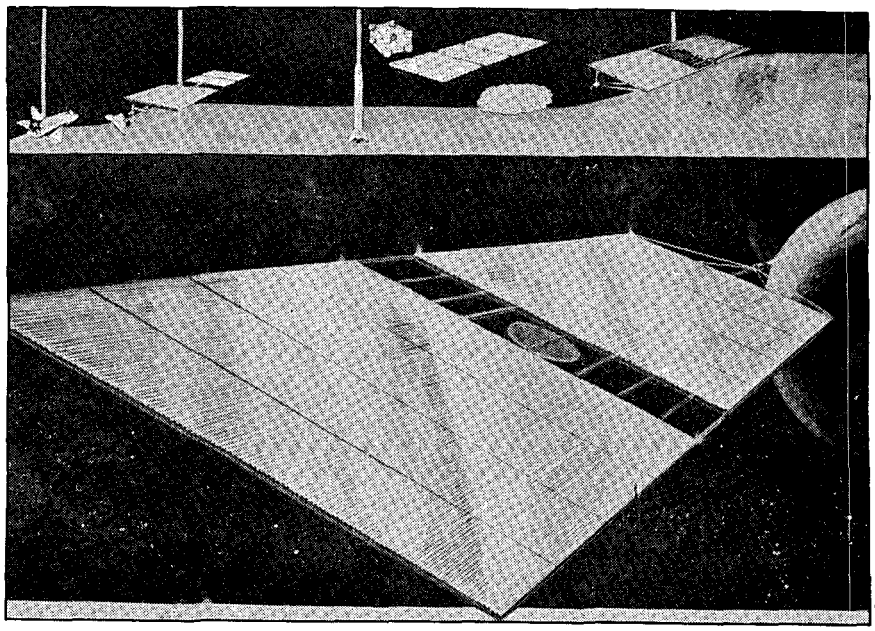
This is not to say that the Green Revolution is a bad thing, but it has only been successful where agriculture is primarily carried out on family-owned small farms rather than on very concentrated landholdings. The Green Revolution has been successful in the Punjab State of India, where land ownership is widely distributed among the population. (The wide distribution of agricultural land in the United States during the 1930s and '40s was essential to the success of the new hybrid varieties of corn.)

In other parts of the world, a major factor in famine is large landholders' cash cropping for export. Throughout the

African Sahel, during the worst years of the drought in the early 1970s, the total production of peanuts for export actually *increased*. And it is governmental policies that favor export crops over food crops for domestic consumption. These policies are thus a major problem, which can be remedied quickly if the political will to do so can be mustered.

Technological means of improved food storage and preservation, on the other hand, do offer prospects for major improvements in food supply. Estimates of grain losses to vermin (primarily rats) in Third World countries such as India range from about 25 percent to as high as 70 percent. Reduction of these losses would provide significant gains in effective food production without ecological damage (except to the rat population).

Finally, innovations in technology can provide large improvements in agricultural yields while actually reducing ecological impact. Closed-environment agriculture using hydroponic techniques, additional artificial lighting, and enhanced carbon dioxide concentrations in the air inside can increase yields per acre by factors as large as 400. These methods can be either highly capital-intensive or highly labor-intensive, providing reasonable matches to supplies of capital and labor for both the industrialized and the Third World nations. (Space colonies, of course, will build on these techniques extensively. Agriculture may yet derive important spin-offs from the space program in a nuts-and-bolts sense.)



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Satellite solar power station

AFFLUENCE POLLUTES?

Despite all the clamor about the rape of the environment in the industrialized nations, the historical fact is that a higher degree of industrialization and technology has tended to *reduce* adverse environmental impact per person, although the specific types of pollution have changed with time. Of all human pollutants, the potentially most lethal form is fecal contamination of water. This is the primary method of transmission for such nasty diseases as typhus, cholera, dysentery, hepatitis, and polio.

With growing affluence, the industrialized countries have invested large sums of capital to control sewage, and this has been the major factor in improving public health (and especially infant mortality) during the last century. In poor countries today, these diseases are still endemic. (Polio and hepatitis are peculiar cases. These diseases, if contracted in infancy, are usually quite benign. In countries with poor sanitation, virtually everyone is exposed in infancy and acquires lifelong immunity. In countries with good sanitation, most of the adult population is vulnerable to these diseases, which are much more virulent in adults. Even before polio vaccines were developed, however, the worst polio epidemics were far less damaging to industrialized nations than are average outbreaks of cholera and dysentery in the Third World today.)

Air pollution from our industries and automobiles does pose problems at the present time, but these have been generally overrated. Contrary to widespread belief, it cannot be shown that even the great "London killer fogs" of the 1950s contributed to an increase in death rates. During each of these incidents, temperatures were lower than normal and the humidity was higher than normal—conditions ideal for upper respiratory infections among the elderly and the very young. The increase in death rates among these two groups following the "killer fogs" was entirely consistent with rates seen during episodes of similar temperature and humidity *without* industrial pollutants.

It is especially interesting to note a recent report on the autopsy findings on the frozen cadaver of an Eskimo woman who died some 16,000 years ago in Alaska. The cause of death was black lung disease, presumably the result of inhaling smoke from seal-oil lamps for a lifetime. No one today in the industrialized countries dies from air pollution created in their own homes by everyday living conditions.

Perhaps the worst environmental damage on earth today results, not from large-scale mining operations or from rubbish or sewage, but from deforestation in the Third World for cooking and heating purposes. The capital of Upper Volta, Ouagadougou, is a city of some 80,000 people. Not one bush or tree remains standing for a radius of 40 kilometers around the city; all the standing wood has been cut down for firewood, and there has been no effective reforestation program to compensate for the annual firewood consumption of approximately one ton per person just for cooking. The Himalayan foothills in Nepal, Pakistan, and parts of northern India are similarly being stripped, increasing erosion and aggravating flooding downstream, with disastrous effects on the best agricultural lands of India, Pakistan, and Bangladesh.

The burning of dried cow dung in India has accelerated since the OPEC oil price increases, reaching some 80 million tons per year in 1975. If this cow dung had been used for fertilizer instead of fuel, it would have supplied about one-third of India's national fertilizer needs. Greater affluence and the use of industrialized energy sources (coal, oil, hydroelectricity, geothermal wells, and nuclear reactors) avoids this kind of massive environmental damage. It is true, of course, that careful management of forests or village woodlots would provide a viable alternative in the Third World, but industrialization has nonetheless provided a way out.

It cannot be shown that the great "London killer fogs" of the 1950s contributed to an increase in death rates.

Chemical spills and dumping into rivers, lakes, and the oceans are a potentially very severe environmental problem for the industrialized nations of the world. But just as in the Third World, the most effec-

tive and rapid solutions may well be political and legal rather than technological. The current approach in the United States is to provide for fines and penalties for violations of emission or release standards. The fines, however, are usually miniscule. A far more direct approach is to make each factory clean up its act by internalizing the cost of polluting the rivers: this can be done very easily by requiring each factory using river water to install its *intake* downstream from its waste pipes, using the same water supply for drinking water as well as industrial processes.

It should by now be clear that growing affluence and industrialization need not mean despoliation of the environment. In pragmatic terms, more affluent societies can afford greater aesthetic sensibilities with respect to the environment, and the historical trend has been just that.

THE MALTHUSIAN SPECTER

As affluence has increased in the Western nations, death rates have declined, followed some time later by declining birth rates. The hope has been that the same would happen in the Third World as economic development brings greater literacy, more diversification of social and economic roles for individuals, and greater economic security in old age.

The common pattern in most impoverished countries is for a couple to have many children in order to ensure that, in the face of high infant and childhood mortality, at least one or two of their children will survive to adulthood to support the parents in their old age. Under these circumstances, the birth rate is, not surprisingly, high. If the infant mortality rate declines very gradually, public perception of that fact is long delayed, so the birth rate continues at the old levels much longer than is really necessary. But if the infant mortality rate changes abruptly and visibly, birth rates can and do change very rapidly as well.

In Sri Lanka (formerly Ceylon), the government instituted a program in the early 1970s in which every person (man, woman, and child) was guaranteed one kilo of rice free per week, with a second kilo available at a price substantially below the market price. The result was dramatic. Within two years, the birth rate had fallen by *half*, with many of the poor citing the improved health of their children as the reason for choosing to reduce the number of children conceived.

Feeding the poor does *not* simply breed more of them, as has been argued as far back as Malthus. Adequate food for the world's population, whatever it may be, is essential to any desirable future, and no intrinsic obstacles or limitations are in sight.

BEHIND BIRTH RATES

With the advent of modern contraceptive technologies, many advocates of zero population growth have urged increased access and universal education in their use as essential programs for survival. Often they have advocated the use of compulsion or, at least, of severe economic penalties or incentives as tools for population policy.

Generally, these approaches have ignored the importance of old-age security as a motivation for bearing many children, often assuming that the high birth rates resulted from ignorance or inability to exercise personal choice and control over reproduction. But the actual facts show that the opposite is true, even in the absence of newer technological means of fertility control.

In the United States, multiple studies of human fertility have shown that, regardless of the technique used by a couple to prevent conception of an additional child, conception would eventually result if either parent had any ambivalent feelings about the desirability of an additional child. But if both parents were thoroughly determined not to have additional children, almost any method would work satisfactorily. And the experience of Sri Lanka shows how rapidly people can alter fertility patterns, even in the absence of technological birth control methods.

MINERAL RESOURCEFULNESS

The ultimate threat of the Doomsday Mystique has been the imminent depletion of the minerals upon which industrial, technological society is based. *The Limits to Growth* was based on a computer model that incorporated this ultra-Malthusian assumption about raw materials. This assumption led, in that study, to the collapse of the socioeconomic system early in the next century—depletion of ores mined today would force us to mine lower-grade ores at much greater cost; eventually, the economy's supply of capital would be completely tied up in mining, leaving no capital for manufacturing and services. Soaring death rates and starvation would result, in this scenario, and nothing can avert this disaster save draconian measures to impose zero economic growth, zero population growth, and total recycling.

But the question of mineral resources was very poorly understood by the authors of *The Limits to Growth*. They underestimated the ability of technology to make substitutions when the price is right, to *develop* new, less expensive techniques for mining and refining ores when economic justification arises. Simultaneously, they overestimated the economic impact that an increase in the price of iron or lead or copper would have on the total economy. In the United States, for example, the total value of new mineral production in 1968 was about 4 percent of the gross national product. If the price of all minerals, across the board, were to double or quadruple, the effect on the economy as a whole would not be disastrous, provided only that it happened sufficiently gradually. Over the period 1870 to 1957, at any rate, the average cost of minerals in the United States (when corrected for inflation) actually *decreased*, despite the fact that the grades of ores mined continued to decrease through most of the period for most minerals.

The table on page 22 gives us some clues about mineral consumption patterns. These figures, for the United States in 1975, reflect only virgin ore use; no allowance is made here for significant recycling of steel and aluminum, especially in industry. Some important points should be noted. First, metals are a tiny fraction of total minerals production and are overwhelmingly dominated by iron, the principal ingredient of steel. Second, fossil fuels amount to nearly half the total tonnage of minerals produced. (These figures are based on *consumption* in the United States, not *extraction*, so that our large petroleum imports are included here.)

Additional data indicate that all of the materials that account for more than a tiny fraction of our total minerals consumption are available in sufficient supply, in forms accessible to present or near-term extractive technologies, to last for *millions* of years, with only two exceptions: fossil fuels and phosphate rock (used principally as a fertilizer in agriculture). Minerals that do appear to be intrinsically scarce (such as copper, zinc, lead, mercury, silver, colombium, and tungsten) must be examined case by case to see what effects we would suffer if they were to become unavailable. In each case, technological substitutions of abundant materials are available or could be developed within the present or near-term state of the art. In recent years, for sound environmental reasons, many of the former uses of lead have been eliminated, and substitutes have been found for each of these uses without perceptible increases in costs. A number of these metals are used in steel making to produce high-

Industrialization and technology have tended to *reduce* adverse environmental impact per person.

strength or chemically resistant alloys. For most of these applications, titanium would perform equally well, sometimes better, and is available in quantities comparable to aluminum.

What about the increased energy requirements for mining lower-grade ores? When the world's supply of bauxite (from which aluminum is presently extracted) is exhausted, we can turn to our choice of more than a dozen alternative minerals for which the technology for extraction is already known. In no case would the energy per finished ton of aluminum exceed the present energy expended by more than a factor of two. For iron, which dominates all metal production, the increased energy costs are even more moderate. Presently, we obtain most of our iron from taconite, which contains about 15 percent iron by weight. Known taconite reserves are sufficient for perhaps 1,500 years at present rates, but when they have been exhausted we can use lateritic iron ores, which contain about 5 percent iron and appear to be sufficient for several million years. The energy per ton of iron from laterites would be only 17 percent higher. Even without scrupulously recycling every gram of minerals used by society, we can confidently state that we are not doomed in the near future by minerals depletion.

But let's return to the other two categories of materials in short supply, phosphate rock and fossil fuels. Our agricultural system concentrates phosphorus in animal bones. Closed-environment agriculture can be expected in the not-too-distant future to significantly reduce consumption of all agricultural fertilizers, including phosphates. Should this not suffice, recycling of bones (especially by meatpacking houses) would make a major contribution. Ultimately, phosphorus can be extracted from ocean water should these measures prove insufficient. Distillation techniques would be very expensive (at least in terms of energy consumption) but would not bankrupt the economy, since phosphate is such a minute portion of the costs of agriculture. It is more likely, however, that within the next thousand years some selective ion-exchange process or osmotic membrane will be developed, allowing us to extract phosphorus efficiently and cheaply from ocean water.

BURYING THE FOSSILS

Everyone agrees that we have to get off the fossil-fuels kick of the past two centuries—not so much because we are running out, but because of the accumulation of carbon dioxide in the atmosphere. The dynamics of the process are poorly understood at present, but we have some reason to believe that continued dependence on fossil fuels could, in two more centuries, raise the mean temperature of the biosphere by six to eight degrees centigrade because of increased opacity of the atmosphere to infrared radiation (the so-called greenhouse effect).

An additional important consideration is that in the United States today each ton of coal extracted from the earth produces some eight tons of mine wastes, which are a source of considerable quantities of biotoxic pollutants leached out by rain into nearby waterways. These pollutants include sulfuric acid, which is also a by-product of copper mining. But the wastes from coal mining presently exceed those from the mining of all metals by a factor of 20. Once we make the transition from fossil fuels to long-term energy sources, pollution will be significantly decreased, even if population grows a few times larger and if we are reduced to lateritic ores for iron.

The present estimates for the length of time our fossil fuels would last do not include low-grade oil shales, as these are very expensive to extract (within presently foreseen technologies) in comparison with current sources of energy. In the long run, however, these oil shales may prove to be important as the basis for a continuing, more sophisticated petrochemicals and plastics industry. For such purposes, it is irrelevant whether the energy expended to obtain a kilogram of oil is less than or greater than the energy content of the extracted oil. Long before we must turn to such sources of hydrocarbons, however, it seems likely that genetic engineering or selective breeding of certain plants may provide us with agricultural supplies of complex hydrocarbons.

Thus, from a materials viewpoint, it seems that the earth itself can support perhaps 10 to 20 billion people—at a standard of living comparable to that in the United States today—far into the future, perhaps several million years. But a necessary development is a long-term source of abundant, environmentally clean, and inexpensive energy.

GETTING UP THE ENERGY

The space enthusiast, of course, has a ready answer for the long-term energy needs of terrestrial civilization—the solar power satellite, which collects solar energy in space and converts it into electricity

NONRENEWABLE RESOURCES EXTRACTED IN 1975 FOR USE IN THE UNITED STATES

	Pounds per Capita	Percentage of All Minerals
Fossil Fuels		
Petroleum	7,650	20.62
Coal, lignite	5,200	14.01
Natural gas	4,200	11.32
Total	17,050	45.95
Nonmetals		
Sand, gravel	8,000	21.56
Stone	8,000	21.56
Cement	660	1.78
Clay	450	1.21
Salt	430	1.16
Phosphate	315	0.85
Other	1,085	2.92
Total	18,940	51.04
Metals		
Iron	1,000	2.69
Aluminum	46	0.12
Copper	16	0.04
Zinc	14	0.04
Lead	11	0.03
Other	31	0.08
Total	1,118	3.01
Total minerals	37,108	100.00

Source: John D. Morgan, "The World Supply/Demand Outlook for Minerals," in *Material Technology*, ed. A. G. Chynoweth and W. M. Walsh (New York: American Institute of Physics, 1976).

that is used to power a microwave-transmitting antenna array, to form a microwave beam focused on a receiving antenna farm on the ground for conversion back into electricity. The electricity can be used directly, with distribution through ordinary electrical transmission lines, or it can be used to synthesize gaseous and liquid fuels or to synthesize ammonia for fertilizer. Some of the fuel options that have been discussed include hydrogen (by electrolysis from water) and methanol (by high-temperature reaction of water and carbon dioxide, which can be extracted from air). Presently, it is unlikely that these would be highly significant in the early stages of space industrialization in the context of economic conditions in North America, but they could be highly relevant in the Third World, where the average cost per unit of energy in the form of liquid fuels is three to five times higher. In the long range, however, the "hydrogen economy" may prove to be most viable, since the transportation costs per unit of energy transported are considerably lower for pipelines carrying hydrogen than for electrical transmission lines.

The move into space will provide satisfaction for the very real human need to explore.

But other options must also be considered in the long range. Fusion power has many attractive features. The local thermal load on the environment would be considerably higher than for solar power satellites but not high enough to be globally significant. Even if global energy consumption per capital rose to US levels for a population of 10 to 20 billion, the total thermal energy released would still be a tiny fraction of one percent of the solar insolation. Local effects, however, could be large.

A great deal of speculation has accompanied discussions of ground-based solar energy schemes. Space heating and cooling and water heating certainly are viable candidates for extensive use of solar energy, but so far solar energy to produce electrical power has been stymied by the need for large storage systems to carry through the night or through periods of heavy overcast.

One solar energy technology that circumvents this difficulty—photoelectrolysis—has received little attention but is amenable to sudden breakthrough. Photoelectrolysis is a process combining the energy of two photons to split a molecule of water into oxygen and hydrogen, which are released at physically separate plates. Because it can utilize low-energy photons, the process has theoretical efficiencies of 40 to 45 percent in converting solar energy into chemical energy in the form of hydrogen gas. The principal technical obstacle to be overcome is a problem with the plates at which the gases are liberated. The cathode, where single oxygen atoms are released, is subject to severe corrosion. The search for suitable plate materials or coatings for the plates is very similar to Thomas Edison's search for a material from which to make filaments for light bulbs. With the right materials, costs for hydrogen produced by photoelectrolysis could be comparable to, or cheaper than, costs per unit of energy for petroleum. Electrical power plants burning hydrogen and either air or oxygen would be environmentally very clean and very simple, requiring only half the capital costs per kilowatt of installed capacity of nuclear power plants. This would create a more difficult competitor for solar power satellites than is provided by nuclear power.

One point should be made here about solar energy systems of any type based on the ground. It is often claimed that such energy systems have no adverse environmental impact at all, but this is simply not true. It is true that solar energy farms in the American desert would not create a thermal source as intense as a nuclear (fission or fusion) power plant. But it is essential for any solar energy scheme to maximize the fraction of incident solar photons which are *absorbed*. Such collectors would thus increase the thermal burden of the biosphere compared to an equal area of barren desert sand, which reflects most of the sunlight falling on it. Reflected photons do not produce heat; absorbed photons do.

WHY MOVE INTO SPACE?

The Doomsday Mystique provided us with a tidy rationale for moving into space quickly and massively, but the *facts* do not justify that Mystique. Should we, then, go into space in a big way?

Basically, only a handful of long-term goals can be convincingly demonstrated as valid motivations for this undertaking. First, such a move would provide "global insurance" for human civilization and for terrestrial life (including a wide variety of life forms besides *Homo sapiens*)—insurance against total extinction by a global catastrophe of either human or natural origin. Second, space industrialization can counter the adverse environmental impact of terrestrial mining and manufacturing, even beyond the improvements we will obtain once we cease mining of fossil hydrocarbons for energy. Third, the move into space will provide satisfaction for the very real human need to explore. The Roman poet Ovid, some 2,000 years ago, in describing the gift of human consciousness, wrote,

God elevated the forehead of Man,
And ordered him to contemplate the stars.

In realistic terms, none of these motivations provides sufficient justification for an investment totaling several tens of billions of dollars. Nations, as well as individuals, can become "insurance poor," and global insurance, as a justification for space programs, would fail to pass this objection. But short-term motivations must also be considered, and these, it would seem, will suffice to establish the kind of beachhead in space necessary and sufficient to eventually meet all of these long-term goals. These justifications are primarily economic, with some political considerations of secondary importance.

New commercial ventures and opportunities in space can be expected to proliferate rapidly.

First, space industrialization can make a profit at an early date in the field of information: communications, earth observations and monitoring, navigation and geolocation, and minerals prospecting. Communications will offer the greatest opportunities for commercialization in the 1980s, with rapid return on investment. Political considerations (such as US foreign aid and economic-development assistance programs for Third World nations) are likely to be significant factors in minerals-prospecting applications.

Second, the prospects for making new, improved, or cheaper products in the new environment—made accessible for materials processing by reduced costs for transportation to orbit—are very good, but difficult to pinpoint at this time. In the 1980s, however, Space Shuttle/Spacelab experiments should be able to identify one or more products that can be made in zero gravity at a profit. Production of such goods would gradually (over five to ten years) lead to the establishment of fairly extensive habitation facilities in low-earth orbit, should these not already exist because of the need to service and repair large communications satellites.

Third, political decisions might be made by the United States and the Soviet Union to deliberately transfer some of their military hardware spending to space programs to provide a rapid decrease in military escalation without severe domestic economic dislocation. This seems somewhat unlikely but is a distinct possibility.

Any of these programs would lead to

(*Continued on p. 40.*)

FREE SPACE!

If there's one thing to be learned from the history of technology, it's that government support entails hidden perils. We can—and should—develop space without government "help."

by Robert Poole, Jr.

THE UNITED STATES STANDS poised on the brink of a new era in the exploitation of space. The Space Shuttle—scheduled for a first launch before the end of the year—will usher in routine, low-cost transportation into earth orbit and back. The technology now exists to develop permanent, manned space installations—factories, power plants, colonies—making for what G. Harry Stine has called the "third industrial revolution." Moreover, many of these activities are starting to look not just feasible but potentially profitable as well.

Nevertheless, most space-industrialization enthusiasts base their expectations and projections on continued—even expanded—government funding. Though many of these people are otherwise ardent free-enterprisers, they argue strongly for government involvement, to reduce the risks and speed the pace of space industrialization. And the specter of government red tape and control? Mostly they soft-pedal it or hope that, as long as *their* people are involved in the planning, it won't be too damaging.

The whole drama has a strangely familiar ring to a student of technological history. The industrialization of space is hardly the first instance of a set of technological developments coming of age. Nor is it the first case of a technology's enthusiasts promoting government assistance. In the past 150 years we have witnessed a number of other commercializations of technology, including the development of the railroads, mass production of automobiles, development of the telephone system, creation of commercial radio and TV broadcasting, and the introduction of nuclear electric-power plants.

In each of these cases the industry in question called on the federal government to play what it considered a crucial role in fostering the industry's development. And in each case, this federal assistance had both benefits and costs. The ostensible benefits—the successful commercialization of the technology and establishment of a viable industry—are quite familiar. Less appreciated are the costs, mainly long-term, which accompanied the assistance.

WORKING ON THE RAILROADS

Government was involved in railroad building, for example, virtually from the start. From the 1830s to the 1850s, state and local governments, anxious to improve products' access to markets and to increase land values, invested heavily in early railway companies. Two-thirds of the Pennsylvania Railroad's 1852 capitalization of $10 million had come from local governments over the years. In the 1830s Ohio adopted a law committing the state to furnish one-third of the capital for *any* railroad company in the state. Besides subsidies and loans, states frequently granted railroads charters, monopoly privileges, the power of eminent domain, and in some cases exemption from taxes. In the 1850s the federal government began to subsidize railroad construction, especially the projects for transcontinental lines. The government made land grants, issued loans, and guaranteed private loans.

By the 1870s, the era of extensive railroad building had ended, and a period of intense competition ensued. Railroads attempted various agreements to restrict competition, but none proved effective for more than a short time. Over a period of years, therefore, railroad officials lobbied for federal regulation to accomplish what private agreements could not. The result was passage in 1887 of the Interstate Commerce Act. This legislation in effect cartelized the railroad industry and set up the Interstate Commerce Commission as administrator of the cartel.

Between 1887 and 1920 the railroads did relatively well as a cartelized industry. But all during those years, new amendments and regulations kept being added, gradually increasing the extent of ICC control and cutting into the authority of railroad management to run their own business. The Transportation Act of 1920 was the culmination of this process, imposing much more stringent restrictions on railroad finance, pricing, and service.

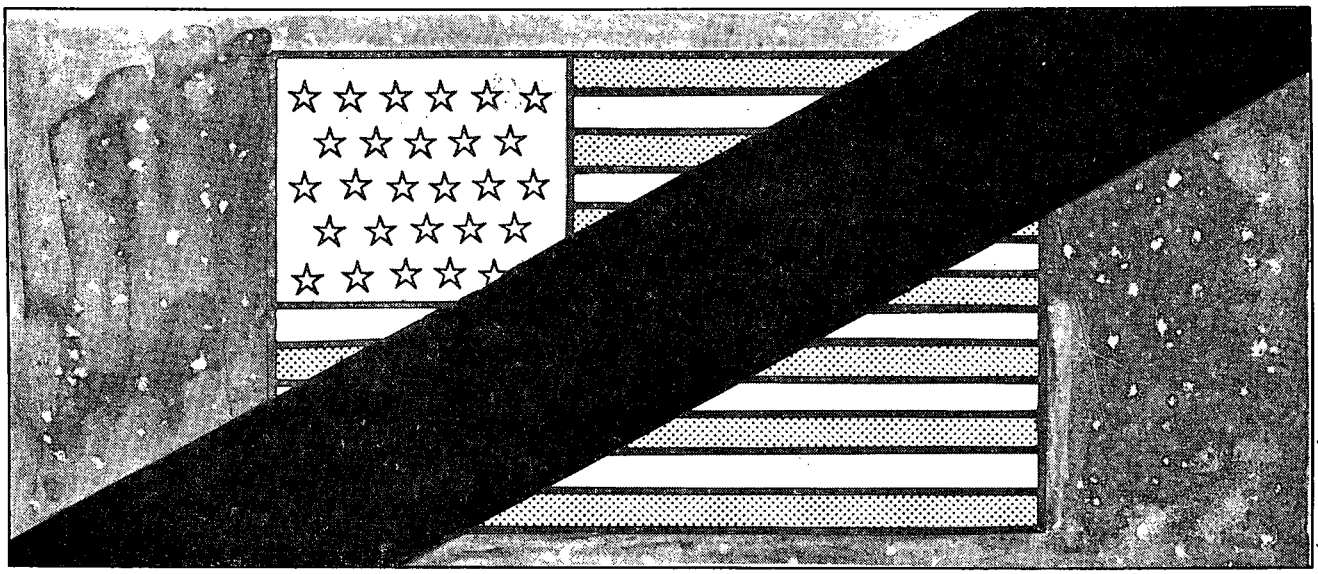


illustration by Nanette Boyer

All key railroad management decisions became subject to ICC approval. The railroads were virtually nationalized, in all but name.

What have been the results of 150 years of government involvement? The initial subsidies, loans, and land grants produced substantial overbuilding, leading to many financial debacles. Numerous uneconomical companies and routes came into being, only to suffer bankruptcy or merger into larger, cumbersome systems. Government regulation initially helped company profits, by halting the long-term downward trend of rates—a dubious benefit to consumers but a usual consequence of cartelization. The creation of the ICC and subsequent regulations also helped freeze the then-existing pattern of routes and companies, preventing the emergence of more-efficient systems, such as transcontinental railroad companies.

In the 20th century the progressively tightened grip of the ICC has come close to strangling the railroads. Their financial ill health is known to all. Decades of "deferred maintenance" are gradually taking their toll. The government take-over of bankrupt Penn Central extended to over a dozen railroads before it was completed. And the deficits of Amtrak and Conrail keep setting new records.

What if the government had not intervened? Would we have no railroads today? Hardly. The rate of initial construction would have been slower, with investors having to be convinced of the soundness of each venture. Fewer uneconomical lines would have been built, and competition would have weeded out more of the marginal firms. Today we would very likely have several competing transcontinental railroads and a host of specialized short lines. Unit trains and piggyback freight service would be far more extensive, and innovations like Auto-Train would probably have occurred on a much wider scale.

PAVING THE WAY

Another area of transportation—the auto industry—has also come in for government subsidy. It is not, of course, the production of automobiles that has been aided. Rather, local, state, and federal governments have provided an extensive and continuing subsidy in the form of paved roads. Prior to the development of the automobile, roads were relatively simple and inexpensive. Except in cities and towns, where brick was sometimes used, most roads were topped with little more than dirt and were built largely by clearing the land and filling in holes. Many roads were privately constructed, including a great number of "turnpike" toll roads in the first half of the 1800s.

The advent of the automobile changed all that. Cars, and especially trucks, required paved roads, and these were far more expensive. The auto industry and automobile owners' associations vigorously promoted the idea that state and federal governments should build paved roads and that the State's coercive power of eminent domain should be used to obtain the land. As more and more people began to purchase cars, these arguments received wider acceptance, and the concept of "free public roads" took on a new, more expensive meaning: instead of referring to freedom of access, the word "free" came to mean "without charge." To be sure, the gasoline tax and the highway trust fund did result in users paying, indirectly, for much of the direct cost of road construction. But these indirect payments are not at all related to the cost of road use by individual users. And, in any case, people think of road use as a "free" good.

With what result? The separation of road use from direct payment has led, in the view of many economists, to a massive overuse of roads, especially during rush hour. A perceived price of zero leads to a virtually infinite demand on the urban freeway system. Economists also note that government roads impose on their surroundings many externalities, such as noise and air pollution, whose costs are not counted. And land-acquisition costs are frequently understated, since the land is secured by eminent domain.

In the first half of the 1800s, many roads were privately constructed.

In the absence of these direct and indirect subsidies, what kind of auto use and road system might we have today? If the government had never condemned land and paved roads, it is quite possible that America would not be the automobile-dominated society that it is today. To be sure, the inherent flexibility of the private automobile is so great that its popularity would still be high, even if users had to pay, directly and in full, for paved roads. But several important aspects would very likely be different.

Highways would all be toll roads and would probably be fewer in number. Most of the freight that now moves by long-distance truck would be carried by rail, at substantial energy and cost savings. There would be roads designed only for automobiles and charging lower tolls than the much more costly roads designed to take truck traffic. In urban areas, the trolley lines of the 1920s and '30s might not have been buried under concrete. Instead, they would have undergone a technological evolution into modern, light-weight, computer-controlled transit systems. Buses, taxis, and jitneys, paying monthly

or annual fees for the use of roads, would serve downtown areas. With the coming of computer technology, sophisticated urban expressway metering systems, like those proposed by William Vickrey of Columbia University, would have come into existence. Such a system, consisting of roadside sensors capable of recording the passage of specific vehicles, tied in to a central computer for billing, would permit the expressway (not *free*way) owner to charge tolls that varied in accordance with demand, thereby greatly reducing congestion and motivating car pooling. In short, without road subsidies America would be much less of an auto-dependent society.

DIALING FOR DOLLARS

Despite the extensive patent protection obtained by the Bell Telephone Company, the early telephone industry was characterized by wide-ranging competition. For the first 30 years following Bell's 1876 prototype, numerous firms entered the telephone business, and many succeeded. Many cities had two or more competing telephone companies, often not interconnected. Despite Bell's efforts to buy up competitors, by 1907 there were nearly as many phones provided by independents as the three million provided by Bell.

Clearly, efficient nationwide telephone service required interconnection and standardization, but the question was, how best to bring this about—by means of the marketplace or via government decree? The government route was the one taken. Financier J. P. Morgan took the lead role in pushing for consolidation. To achieve his goal of a single nationwide system, he brought Bell pioneer Theodore Vail out of retirement to head AT&T.

Protected by the FCC, the radio broadcast industry became cautious, conservative, monopolistic —and very profitable.

Vail proceeded to implement the goal of "one policy, one system, universal service." The two key elements in his campaign were the creation of state public utility commissions that would grant telephone monopoly franchises and then regulate the rates charged and the creation of a similar federal regulatory apparatus for interstate operations. The Vail plan succeeded rapidly; commissions were set up in most of the states within a decade, and the federal government brought telephone and telegraph companies under ICC regulation in 1910. They were given their own regulatory agency with the passage of the Communications Act of 1934, which set up the Federal Communications Commission.

Under state PUC and FCC regulation, we have gained a technically sound telephone system. But the system—and its various franchised companies—has fallen behind technologically, offering far less capability and in many cases charging far higher rates than current technology makes possible. It is only in the last 10 years that the FCC has begun to allow limited competition—in both the end-user equipment market and in long-distance transmission. True, specific telephone companies holding exclusive franchises have prospered under the government's wing. But consumers have been denied many of the benefits of advanced technology that have been available in *other* areas of the market—in electronics and data processing, for example.

What might today's telephone system be like if the industry had not obtained government help and protection? It's not likely that there would be duplicate sets of phone lines in our cities—economic considerations would probably have ended *that* aspect of competition. Yet many other types of competition would probably have blossomed.

Right from the start there would likely have been competition in long-distance transmission—much as there has been in railroading, with different firms laying out different cross-country routes. Certainly, in the absence of FCC prohibition, long-distance microwave transmission companies would have come into their own long before the 1970s, providing vigorous competitive service for both voice and data. And satellite transmission of long-distance communications would have made rooftop antenna service—like Satellite Business Systems is only now gearing up for—a reality by the late 1960s or early '70s. In fact, commercial investment in communications satellites would very likely have been far greater, and sooner, had long-distance communications not been virtually monopolized by one company anxious to protect its massive investment in cable facilities. Instead of springing to life very belatedly in the 1960s, competition in providing end-user equipment would have grown up along with the industry, giving consumers and businesses a far wider range of PBXs, terminals, and special-purpose telephones.

What about standardization in the absence of regulatory control? Oddly enough, the railroads achieved nationwide standardization of track gauge long before they were federally regulated, simply because universal interconnection made good economic sense. And the railroads—again on their own—developed the idea of time zones and nationwide standard time. The machine-tool industry likewise developed standardized screw threads. There is every reason to think the telephone industry would have been farsighted enough to do similarly.

RIDING THE AIR WAVES

Commercial radio broadcasting began in 1920, and by 1922 there were 564 broadcasting stations in the United States. Because no law provided for assigning property rights in specific radio frequencies, chaos was the order of the day during this early period. Users of all types freely chose which frequencies to use, subject only to registering their use with the secretary of Commerce, under a 1912 law. Conflicts between users abounded, leading Commerce Secretary Hoover to call a series of Radio Conferences in the early '20s. The general thrust of these meetings was that the federal government should be empowered to allocate frequency use and at the same time to *prevent* any user from establishing property rights in any spectrum allocation. Legislation embodying these principles finally emerged in 1927, bringing into being the Federal Radio Commission. At the price of giving up any property rights to radio frequencies, and conceding control over the essentials of their business to a federal agency, broadcasters achieved order in their industry.

The rest of the history is well known. In 1934 the Federal Communications Commission was created, superseding the FRC and adding telephone and telegraph to its regulatory functions. Protected by the FCC, the radio broadcast industry became cautious, conservative, monopolistic—and very profitable. Television accentuated the pattern, with three powerful networks coming to dominate the industry. Growing adept at utilizing the FCC to their advantage, the networks successfully manipulated the commission into retarding the development of pay TV and cable TV. Nationwide programming for a mass audience demanded lowest-common-denominator program content in order to maximize market share. The result was the cultural "wasteland" bemoaned by critics in the 1960s and still with us today —along with an FCC that continually engages in implicit and explicit censorship of a kind that would never be tolerated in the print media.

How might radio and TV have developed in the absence of the FCC? Interference between spectrum users had to be prevented *somehow*, but the normal mechanism for resolving such conflicts over the use of a limited resource—for example, downtown land—is a legal system that provides for the protection of property rights. If, instead of creating the FRC,

Congress had defined property rights in the electromagnetic spectrum, and made them fully transferrable in the market and enforceable in the courts, there would have been no need for an administrative body with vast powers to control the shape of the industry.

Consequently, there would have been no way for the present monolithic network structure to remain the dominant pattern in the industry—*if* it had come into existence to begin with. Cable-TV technology and more-aggressive development of UHF would have led to a vast expansion in the number of channels and the type and diversity of programming. Cable today would be in virtually every home in urban areas, offering specialized pay-TV programs catering to hundreds of special-interest markets, much as magazines do today. Two-way, interactive cable would already be a widespread reality. Many fortunes would have been made outside the narrow realm of mass-market broadcast TV. And consumers would be far and away the ultimate beneficiaries.

PUSHING THE ATOM

In nuclear power we find an industry which, once again, has come to its present size and prominence primarily with government assistance. In this case, however, the industry itself is largely a government creation, rather than being an independent sector that sought out government protection.

After World War II the federal government, possibly reflecting pangs of conscience over the use of atomic weapons against Japan, decided to promote the development of the "peaceful atom." After laying out billions of dollars, the government announced in 1954 that the technology for nuclear electric-power production was ready for commercialization. Congress passed the Atomic Energy Act of 1954, permitting private utilities to take part in atomic power development by giving them access to the Atomic Energy Commission's heretofore classified technology.

Unfortunately, despite extensive R&D efforts, the insurance industry considered the potential risks of nuclear accidents too great and refused to write third-party liability insurance for nuclear power plants. Congress therefore passed the 1957 Price-Anderson Indemnity Act, making the *taxpayers* liable for any large-scale nuclear accident. With this cushion, the insurance industry then made available $60 million per reactor in conventional liability coverage.

Despite both the R&D subsidies and federal insurance coverage, the growth of commercial nuclear power has been halting and uncertain. A 1977 study by the Rand Corporation concluded that if it had not been for the quadrupling of oil prices by OPEC, nuclear power plants would still not be competitive with fossil-fuel plants. What seems to have happened is that governmental efforts have pushed high-cost nuclear technology onto the marketplace before the market really called for it. Decades of AEC public-relations efforts misled both the public and the power industry into expecting too much, too soon, of a very complex, costly (but nonetheless worthwhile) technology. This made for fiascos like Westinghouse overextending itself in making commitments to supply reactor buyers with uranium. Utilities believed their own PR that minimized the cost and complexity and maximized the ready availability of nuclear power plants. The AEC in the early years failed to appreciate the difficulties involved in such issues as nuclear waste disposal and glossed over them in public. As a result of all these factors, in the 1970s a massive public-opinion backlash set in, fanned and exploited by many with political or ideological axes to grind.

Government public-relations efforts misled the public and the power industry into expecting too much, too soon, of nuclear power.

What if commercial nuclear power development had not been subsidized and its liability limited by the federal government? If, instead, the government had merely made available to the power industry the nonclassified results of its military reactor R&D programs? Some would say that we'd have *no* nuclear plants in operation today. And that might be true. More likely, I believe, is that industry would have conducted a lower-key R&D effort on its own, focusing far more attention on design and operational factors relating to reactor safety and waste disposal. Prototype reactors would have operated for many years, and commercialization might just about now be beginning—with enough operating experience and proven safety features to convince the insurance industry that reactors are insurable. Instead of a public backlash, there would probably be a wave of enthusiasm for nuclear power, which would now be viewed —along with solar power—as America's savior from the depredations of OPEC.

PERILS ABOUND

In each of these cases of new technology being commercialized, the government played a major role. It sometimes provided heavy subsidies that encouraged investment well beyond what would have occurred at that stage with strictly private efforts. In the terminology of economists, such investments represent misallocations of resources—funds were transferred away from sectors where the market signaled that they could be more productively (profitably) used, to areas that were less, or not *yet*, productive. Such uneconomical investments are most evident in the cases of the railroads and nuclear power plants. In other instances government involvement served to determine the shape and structure of the industry, distorting it from what free-market forces would have produced and leading to its ultimate control by government. This was the fate of the telephone and broadcasting industries.

Government involvement has also led to serious social consequences, such as fuel-wasting transportation patterns, overdependence on the automobile, mind-numbing television programming, and a backlash against high-techology energy. In the case of the railroads, where government involvement has the longest history, we see an industry regulated into stagnation and decay.

Thus, possible perils in government intervention in the introduction of new technology include:

- premature, and therefore inefficient, investment of capital;
- eventual government control;
- adverse social consequences;
- stagnation of the industry;
- popular backlash due to the above and to government sponsorship and subsidy.

In no case did government involvement make possible the development of the industry. It may have speeded it up a little or altered its course somewhat. But in each case, the industry developed because it made economic sense, in and of itself. And the same applies to space industrialization.

COMMERCIALIZING SPACE

Government involvement in space, except for military purposes, has heretofore been focused mainly in two directions: public-relations efforts (beating the Soviets to the moon), and scientific research. More than half of total NASA expenditures to date have been on Cold War PR efforts like the Apollo program. The bulk of its remaining funding has gone, not for commercial or industrial projects, but for scientific endeavors—astronomy, geophysics, planetary chemistry, etc. It is only within the last five years, with the development of the Space Shuttle, that NASA has begun to take commercial utilization of space seriously.

(*Continued on p. 33.*)

GATEWAY TO SPACE

An international space freeport is the goal of a promising partnership between entrepreneurs and the Third World.

by Gary Hudson and Philip K. Chapman

OPPORTUNITIES FOR COMMERCIAL ventures in the reaches beyond the atmosphere are growing more real with each passing day. Many experts in the field of space industrialization expect a virtual explosion of profitable business activities in the space near the earth over the next few decades.

Already, the communication satellite business approaches $2 billion in total market size. During the next decade it is anticipated that the market for space services such as earth-resource surveying by satellite, manufacturing in microgravity, and additional communications business may grow to several times that amount. In the following years, projects with multi-billion dollar returns may be possible—for example, mining asteroids for useful materials or fabricating solar power stations in orbit to supply energy to earth.

As with any large-scale initiative, problems stand in the way of realization of these benefits, although for the most part they are not technological. They concern, instead, cost barriers to taking advantage of these prospects in space and political uncertainties over commercial enterprises in the space environment. Already space has become an arena for national rivalries, with the introduction of killer satellites. If the commercial applications of space are to be fully realized, a means must be found to ensure economical, non-governmental, and international access to orbit.

A unique opportunity is at hand to widen such access and to promote peaceful commercial development of the frontier. The key to the concept—now attracting wide support among developing nations—is a 200-square-mile space-oriented industrial park on earth. Known as a World Space Freeport, it would have powerful incentives to promote growth: complete exemption from taxes, tariffs, and barriers to commerce.

An unusual coalition of participants has formed to advance the Space Freeport, which would be established in a developing country. Among the supporters are such individuals as Robert Heinlein and Buckminster Fuller and a number of past and present aerospace executives and NASA officials. Representatives of 18 nations now have advisory roles in the development of programs to be funded by the freeport. The idea has attracted support from representatives of developing countries at the United Nations in the past few months, where it was praised last October for its potential "for generating finance to provide the impetus for the research, training, and other activities aimed at bringing the benefits of outer space to all nations." Liberia and several other countries have gone so far as to state their readiness to designate 200 square miles as a tax- and tariff-free area encouraging space development.

FREE-TRADE POSSIBILITIES

Before examining the space-related promise of a new freeport, it is worth exploring the economic aspects that have contributed to international interest in the proposal to date. Two years ago, a small group of space-oriented individuals of a largely free-market persuasion began to discuss ways to promote the commercial development of space so as to benefit both industry and the developing nations. They believed that future conflicts between the "have" and "have-not" nations could pose risks for commercial space development, much as has occurred with private attempts to begin mining the ocean bottom (see "The Seabed Power Struggle," REASON, July 1974). Under the aegis of a nonprofit research group in Santa Barbara, California—the Sabre Foundation—members of the project be-

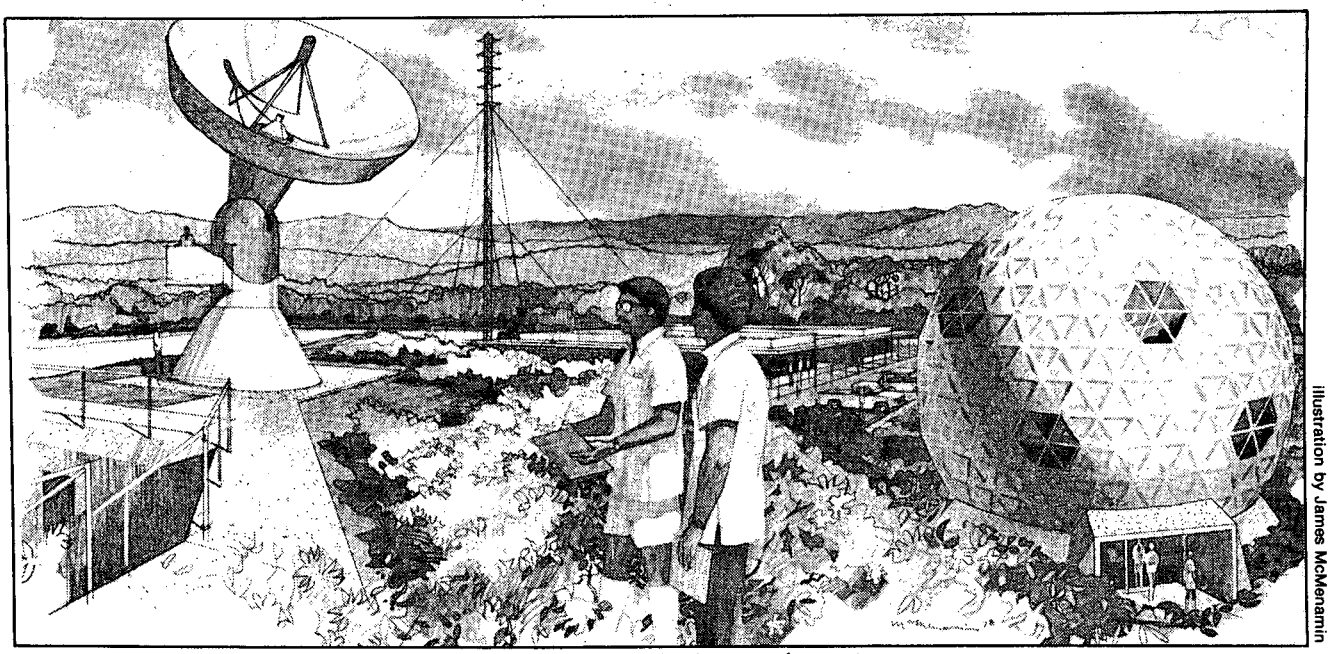


illustration by James McMenamin

Satellite ground station in space freeport

came impressed by the potential for freeports to become a nexus of a new relationship in developing the frontier. Their research showed that developing nations could generate significant revenues from freeports to fund new space initiatives.

Among the originators of the Space Freeport project was Prof. Alvin Rabushka, a specialist in free-trade zones at the Hoover Institution at Stanford University. Drawing upon first-hand knowledge of free-trade zones around the world, he identified factors that appear to make some areas more successful than others. Labor markets and proximity to trade routes exert some influence, Rabushka concluded, but political factors are often decisive for the prospering of free zones.

A Space Freeport could overtake even the most dynamic of the existing free-trade zones.

By definition, all freeports and free-trade zones offer to commercial enterprises some relief from taxes or tariffs. Yet the extent of relief is generally limited in time to between 5 and 20 years. In many cases, moreover, the exemptions are considerably limited according to the type of business in question, and red tape frequently encumbers operations. To make the proposed Space Freeport as prosperous as possible, researchers for the project proposed the following conditions for the site:

- No duties, commodity or sales taxes.
- No exchange controls; free banking activities in all currencies.
- No personal income or corporation taxes (conventional depreciation write-downs are irrelevant).
- All profits may be 100 percent repatriated.
- All infrastructure charges, utilities, and import costs at world market prices.
- Land leases freely transferable at market prices.

Other means of ensuring the attractiveness of the freeport to commercial tenants —both space- and nonspace-related— were also explored. The founder of the project, a 27-year-old Harvard graduate named Mark Frazier, who specializes in free-trade zones and municipal service delivery, determined that the exemptions from taxes and tariffs should last for 99 years, rather than a period of one-tenth that duration, as is standard in existing zones. The only regulations at the freeport would pertain to sanitation and health standards, import of military weaponry, and traffic in other nonpeaceful commodities. These minimal restrictions would be administered by a nongovernmental organization formed specifically for the purpose.

POTENTIAL PROSPERITY

The proposed package has proven attractive to potential host countries. With the assurance of continuing sovereignty and title to the land at a Space Freeport, a dozen governments have responded positively. Part of the response seems attributable to knowledge of several flourishing— though significantly restricted, free-trade zones now operating in developing nations. At the free zone in Colon, Panama, more than $1.3 billion in commerce is transacted annually at a 100-acre site. Direct employment generated by the zone is estimated now at 7,000 jobs annually in the country. The freeports of Singapore and Hong Kong have also demonstrated the merits of the approach. In three zones amounting to a single square mile in Taiwan, adoption of free-trade policies has led to the generation of an annual trade surplus at the zones greater than that of the rest of the country. And a free zone in Masan, Korea, has been responsible for the creation of more than 50,000 jobs since its inception in 1971.

Organizers do not seem daunted by the size of the task before them.

A Space Freeport has the potential to overtake even the most dynamic of these zones. Its incentives to business investment would be unequaled, while the size of the zone—14 miles square—would put it in the same class of physical dimensions as Hong Kong and Singapore. Conservative assumptions suggest that the freeport would create substantial revenues from its first year of operation. Assuming that one-fortieth of the zone were to be leased in the initial year, at a rate no higher than that charged by free zones in other developing countries (about $130 per month for one-quarter acre), rentals alone would net more than $12 million. Foreign exchange earnings would be much higher. If the tenants at the zone enjoyed even one-*thirtieth* of Taiwan's export sales per acre, more than $90 million in foreign exchange would be earned in the initial year.

Rental income from the freeport would

be used by the administering agency in lieu of taxes. Once half of the zone had been leased, these revenues would approach $400 million per year. The Space Freeport project has proposed that a third of this income be paid to the host government in royalties, while another third be used to defray costs of infrastructure development and service delivery. The remaining third—ultimately $130 million a year—would go to help lay the foundation for a new era of commercial development for space.

THIRD WORLD STAKES

The romance of space has ebbed and flowed in America in recent years, but it has never really lost popularity in the Third World. Thus, when project members proposed the Space Freeport to possible host countries, it found a number of nations willing to investigate the creation of a freeport where politics might normally have inclined them otherwise. In a very visible way, a freeport devoted to international space activities could assist the host country in jumping to the frontlines of development.

Although overshadowed by the budgets of NASA, $130 million a year would have significant consequences for Third World space efforts. With modern technologies, nations can now develop communications systems without having to connect telephone users with expensive and obsolescent copper wires across the country. Satellite sensing of mineral deposits can open up valuable commercial opportunities in developing nations. With judicious use of freeport income, these and other benefits of space technology to the Third World could be greatly enhanced. As additional freeports for space are established in the future, the total amount available for such purposes would multiply.

Programs in the transfer of technology to developing nations would be overseen by a nonprofit, freeport-financed organization called the World Space Center. Presently incorporating in Austria, to ensure a neutral base, the center is today composed of representatives of 18 nations. Its decisionmaking council consists of space scientists and officials from countries ranging from Afghanistan to Venezuela. Upon establishment of the first Space Freeport, the council will convene to approve spending priorities for the initial year.

In recent months, the contours of future World Space Center activities have begun to emerge. A waiting list of more than a year for developing-nations' personnel to receive training from the US government in interpretation of satellite imagery has prompted organizers of the center to arrange with the University of California at Santa Barbara for creation of similar courses. The proposed Remote Sensing Institute, to be funded by freeport income, would accommodate up to 200 trainees a year. Upon completion of the courses, graduates would be assisted in efforts to establish freeports in their home countries.

Another portion of the income will be invested on behalf of participating nations in promising commercial space enterprises. With a multitude of high-risk/high-payoff ventures likely to appear in the next 20 years, it is conceivable that the center could reap handsome returns for its efforts. Revenues from the investment could be used to support research into

PROFITS ON HIGH

As we enter the third decade of the space program, the emphasis is shifting from the exploration of space to the exploitation of potential space resources. Among those resources are microgravity, materials more abundant than are found on earth, undiminished solar energy, and most important in the short run, the unobstructed "view from a height."

Two space services afforded by this all-encompassing view from orbit above the earth bear special examination. First, satellites placed in geosynchronous earth orbit can image a full one-third of the planet without changing position. Used by nearly all communication satellites presently operating, this so-called 24-hour equatorial orbit is a key to many space services. Present comsats are relatively small in both size and capacity, generally weighing under 5,000 pounds and capable of carrying a few thousand telephone or a few dozen TV signals. This style of comsat will continue to be operated for the next decade.

While most communication satellites are quite small at this stage, the prospect is for them to grow by tens and even hundreds of times in size, power, and weight. Higher power transmitters coupled to large antennas and sensitive receivers will permit the use of very small companion units by ground-based users. This "complexity inversion" process (complex, heavy satellites; simple, cheap terminals) will allow direct broadcast of information and programming into the home or the office of the future. The number of TV channels, for example, may be increased to several tens of thousands, receivable the world over. Telecommunications will be changed dramatically by the use of small, calculator-sized pocket phones that will eliminate the need to be restricted to a single location, such as an office, to receive calls. Data communications will become much easier and cheaper, leading to electronic mail communication and widespread use of computers in all aspects of business life. Information banks will funnel their information through the large comsat platforms of the future, giving us access to vast amounts of data on which to base our plans.

The remote sensing of earth resources is also a profitable business opportunity in the near future. With an operational form of satellite similar to the NASA Landsat series, companies and countries will be able to locate promising new resources of gas, oil, and minerals. Additionally, remote sensing is useful in checking the spread of crop infestations and disease. All of this information is of prime economic value, both for the direct user of the service and also for the investor or commodity trader. Space sensing of earth may help prevent unruly markets for certain goods or warn interested parties well in advance of a commodity crisis.

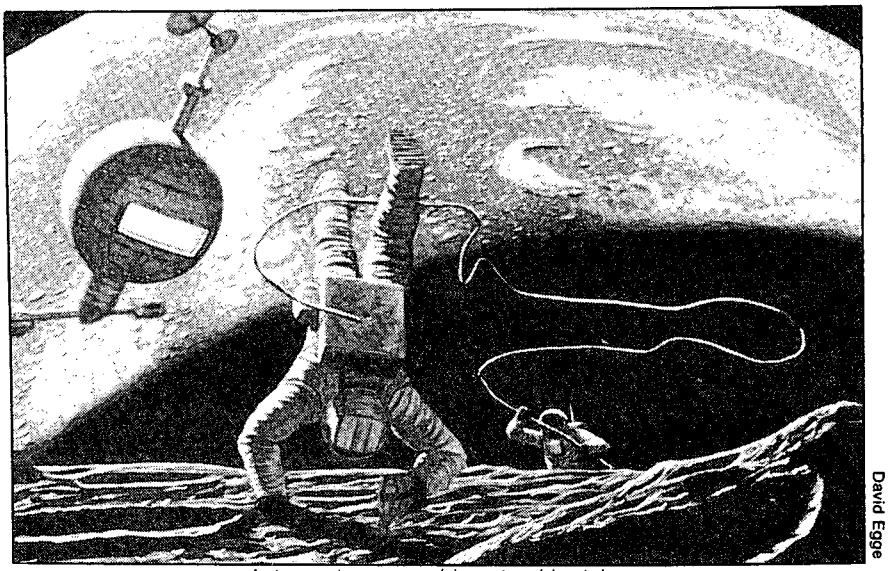
A further market will develop in the education and training of experts in the fields of communications and earth sensing. While the World Space Center has plans to offer courses in at least one of these fields, it is probable that the market is large enough to warrant both major consulting and training activities of a commercial nature.

Later in the decade of the '80s, other opportunities for the near-term use of space will mature. Foremost among these will be the possibility of manufacturing in microgravity. Several hundred US and foreign firms have already contacted NASA (which is sponsoring early studies of materials processing in space [MPS] and planning flight experiments aboard the Space Shuttle), and over 200 have purchased space on future Shuttle flights to test their own MPS ideas.

Space processing may mean the development of exotic new materials that cannot be manufactured in the gravitational field of earth for any of several reasons. Among the products envisioned by NASA and industry experts are new or improved biologicals and pharmaceuticals, unusual elec-

peaceful applications of space, development of Third World-oriented satellite systems, and further training programs. Developing nations would thus acquire a stake in the private development of space.

The World Space Center organizers expect a considerable portion of the budget to be spent on lowering the cost barriers for developing countries seeking to orbit satellites. At present, even with the advent of new US and European launch systems in the coming decade, it seems likely that the price of buying satellites will remain beyond the reach of many nations. A "Users Fund" could offer assistance to such countries on a matching-grant basis.



David Egge

Astronauts engaged in asteroid mining

PEACEFUL SATELLITES

Organizers of the Space Freeport proposal ultimately see a further benefit from their project. By the late 1980s, they believe, demand for satellite launches will have grown enough to justify creation of an international space launching site, to be located near the equator. In contrast to launching ranges at higher latitudes, an equatorial site offers the following intrinsic advantages:

- *Additional momentum for launch vehicles.* At the equator, the spin of the earth amounts to almost 1,000 miles an hour in an easterly direction. Satellite launches into equatorial orbit from low latitudes thus are more efficient than from other locations, where the boosters have less momentum.
- *Simplified orbital paths.* To enter an equatorial orbital plane, most satellites now launched must make wasteful "dogleg" maneuvers. An equatorial launch site can render doglegging unnecessary and simplify tracking procedures. A launch area near the equator, moreover, permits insertion of a satellite into any orbital plane with relative ease.
- *More frequent "windows."* Because satellites launched from the equator can pass overhead on each circuit, launch opportunities open up with each orbit for a minimum energy/fuel rendezvous. If a space vehicle in equatorial orbit is to return to earth, landing procedures are simplified by the recovery site's position in the orbital plane.

These benefits have already been instrumental in persuading two existing launch organizations to establish equatorial sites. The European Space Agency will begin offering launch services by 1980 from a base in French Guiana, South America. A controversial private West German organization, OTRAG, has spent approximately $30 million to develop an exclusive launch zone in Zaire (see REASON, July 1978). In addition to these sites, equatorial ranges for suborbital "sounding" rockets—used for atmospheric tests—exist in Kenya and India.

Unlike other satellite-launching areas, an earthport would be the first launch center to serve the entire planet.

Unlike other satellite-launching areas,

tronic devices with potentially large markets, and ultrahigh-strength materials. One enticing possibility is the manufacture of room-temperature superconductors, which would completely revolutionize the power storage, generation, and transmission industry.

Once large boosters are developed, and commercial space transport really begins, many new and highly profitable business ventures in space will be possible. Two of great interest and import are powersats and extraterrestrial mining.

Powersats, or satellite power stations, would be large platforms (many kilometers on a side) assembled in equatorial geosynchronous orbit. Able to convert sunlight into electrical energy, which would be beamed to earth users in the form of microwaves or laser light, such power plants may be competitive with earth-based forms of electricity generation. At the same time, they will be nonpolluting and more efficient than ground-based solar installations. Ultimately, hundreds of powersats might be placed into orbit, each with a worth of as much as $10 billion, according to NASA estimates.

Mining the moon and the asteroids might seem improbable on first consideration, but NASA and industry studies indicate that such is far from being the case. While first studies concentrated on the moon following the successful Apollo missions to the lunar surface, later reports suggest that certain asteroids, notably the nickel-iron class, may be the first target for extraterrestrial prospectors. By the 1990s, it should be possible to mine a nickel-iron asteroid and profitably return loads of cobalt, platinum, rhenium, vanadium, osmium, iridium, and gold to earth.

As an illustration, the total economic value of a single 100-yard diameter nickel-iron asteroid is over $4 billion (.25 billion iron, 1.5 billion nickel, .5 billion platinum, 1.6 billion cobalt, more than 1 billion trace elements). Some astronomers calculate that more than 100,000 bodies this size or larger exist in the solar system, yet the energy requirement to reach them is no greater than that needed to travel half-way around the earth, once the transportation system has been developed.

Investment opportunities can thus be expected to abound in the coming decades of space. By setting aside a portion of the freeport lease income for investment in promising commercial enterprises, the World Space Center can ensure that the developing nations will profit from windfalls enjoyed by space-oriented businesses. Income earned by this investment fund will be used to support further space ventures by developing nations. In this way, the Third World will have a stake in the commercial development of space.

—Gary Hudson

an earthport would be the first launch center to serve the entire planet. Its international nature would help to lower cost barriers for both launch providers and their customers. Rather than having to build separate launch facilities of their own, organizations wishing to conduct equatorial launches could benefit from the savings of shared infrastructure and support services. As a freeport, it would provide a depoliticized atmosphere conducive to peaceful operations by governmental and private launch organizations alike.

In the long run, such a launch site would conceivably pay major dividends in preserving world peace. Within the next two decades, under almost any scenario, many new nations will acquire the means to start their own rocket programs. The spread of launch capability may result in further deployment of ballistic missile systems within national boundaries. If countries have the option of conducting peaceful operations at an international site, the proliferation of these future weapons delivery systems could be reduced. Earthport would offer incentives for nations to undertake peaceful space efforts at a central location, by offering considerable cost savings over attempts to go it alone. The neutrality of the site would also lessen political reasons for conducting rocket programs within national boundaries.

Because any future launch zone must enjoy strong international support, the decision about where and when to create Earthport will be left to members of the World Space Center. Careful international studies will precede any such move. If optimistic estimates of space industrialization are correct, however, there could be as many as three international launch sites—one in Africa, one in the Pacific, and one in South America—by the end of the century, each serving nearby industrial countries.

BRIGHT FUTURE

The next few months will determine the prospects for the Space Freeport. Operated until recently by volunteers, with financial support from such sources as Arthur C. Clarke and Barbara Marx Hubbard, the project is moving rapidly into a new stage. Legal expertise in the establishment of necessary enabling legislation is being offered by a leading New York law firm. At the suggestion of the Liberian government, preparations are under way for a visit to review potential sites for a freeport in Liberia. Research trips to other countries expressing interest in the project, including Sudan, Indonesia, Venezuela, and Kenya are also anticipated.

In the near future, also, a new nonprofit Free Zone Authority is expected to be incorporated to provide administrative services at the site chosen for the Space Freeport. The authority will oversee the development of infrastructure and the contractual delivery of services at the freeport, as well as establish arbitration mechanisms for disputes among tenants. Its first task will be to procure letters of intent from potential lease tenants at the zone, who will be offered rights to rent one-quarter acre or more of tax- and tariff-exempt land at an annual rate of $1.44 per square meter. Provided sufficient interest is found among prospective tenants, the Free Zone Authority will borrow from lending institutions a significant portion of its anticipated lease income for the first year to begin operations.

Organizers do not seem daunted by the size of the task before them. The Free Zone Authority has already been fortunate in attracting the participation of individuals with diverse talents and backgrounds: municipal services specialist Robert W. Poole, Jr., Harvard astrophysicist Larry Smarr, rocket pioneer Krafft Ehricke, international businessman and Common Market advisor Michael van Notten, and a number of others. Under the supervision of Stanford freeport expert Alvin Rabushka, a detailed development plan for the freeport is now in progress. "It really is a way for individuals to affect the direction in which space develops," notes project director Frazier. "And it's a chance to see a zone of unprecedented economic opportunity set up on earth." Given the progress of the Space Freeport concept to date, it is possible that an important threshold for civilization may soon be crossed.

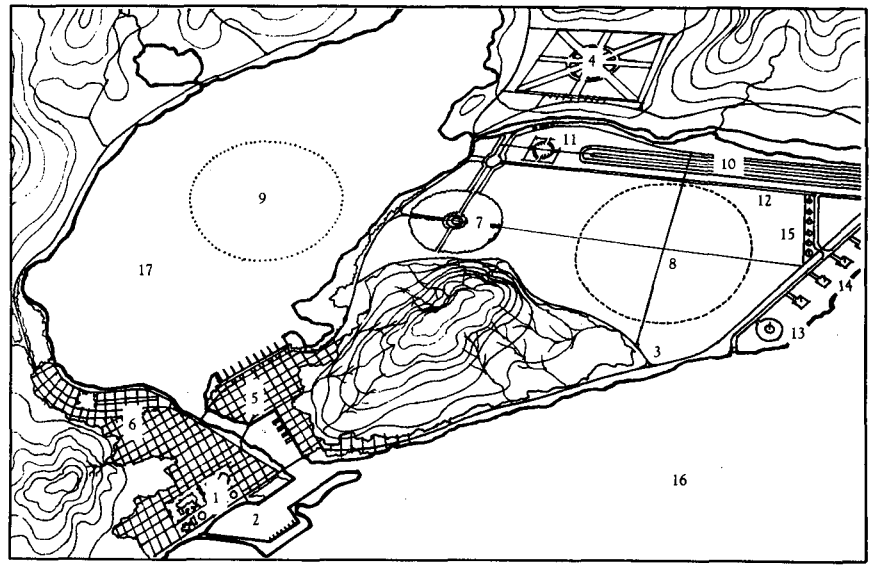


illustration by James McMenamin

Preliminary Earthport Design

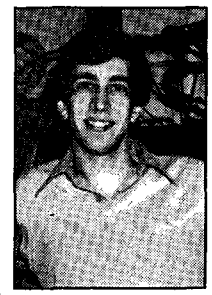
An artist's rendering shows possible design for Earthport. To accommodate a wide range of future as well as present launch providers, the site would offer protected areas for heavy-lift launch vehicles and wet and dry recovery zones.

General Facilities

1. Freeport Administrative Center and World Space Center
2. Harbor facilities
3. Railroads and highways
4. Airport
5. Commercial/industrial zone
6. Residential zone

Space Facilities

7. Space launch and flight control facility
8. Dry landing are for spacecraft (5 km. diameter)
9. Water landing area for spacecraft (5 km. diameter)
10. Shuttle landing strips
11. Shuttle support facility
12. Canal for spacecraft transport
13. Water launch area, heavy-lift vehicle
14. Launch pads, medium-lift vehicle
15. Launch pads, light-lift vehicles
16. Ocean
17. Bay, lake, or estuary



Gary Hudson is a consultant to NASA and the head of a nonprofit aerospace research organization, The Foundation (85 E. Geranium Ave., St. Paul, Minn. 55117).

Philip K. Chapman, a former scientist-astronaut, is engaged in studies of future solar satellites for the consulting firm of Arthur D. Little. He is president pro tem of the World Space Center. Portions of this article have appeared in the Commercial Space Report, *a monthly newsletter published by The Foundation.*

Poole

(Continued from p. 27.)

But even now there remains the question whether NASA really understands the world of profit-and-loss business. The Shuttle program is funded at several billion dollars per year and reflects NASA's Apollo-proven, gold-plated approach to system development. In sharp contrast is the modular launch vehicle being developed completely privately by OTRAG in West Germany (see REASON, July 1978). OTRAG, which made its first test launch in May 1977, has invested over $30 million to date and expects development costs to total only $400 million by the time its first low-earth-orbit booster is qualified in 1981. OTRAG is relying heavily on mass-produced, commercially available, off-the-shelf components to keep costs down. To minimize complexity, it has avoided using cryogenic fuels. Its booster design is totally modular, even having a separate microcomputer for each rocket motor.

The contrast between OTRAG and NASA speaks volumes about the difference between private industry and government. OTRAG is making design decisions on the basis of true cost-effectiveness. Without access to the taxpayers' wallets, it must demonstrate to its 600 private investors that it can design and build a launch vehicle that is simple, cheap, and reliable. It is engineers and cost analysts who have the ear of OTRAG's management, not scientists used to living at public expense. And that difference makes all the difference.

What has happened with NASA is similar to what happened with railroads and nuclear power. Enthusiasts for the new technology grew impatient with the cautious, cost-minded pace of commercialization and turned to government to speed things up. But as in those prior examples, government has devoted huge efforts to misallocating resources—playing Cold War macho games and being a patron of science—instead of taking space exploitation seriously as a business prospect. The result, already, is a large group of vested interests depending on ever-larger NASA budgets.

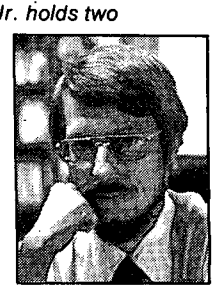
But the emergence of OTRAG indicates that a new era is about to begin. (OTRAG is the first, but by no means the only, private launch-vehicle effort; several others are already on the drawing boards.) For years the argument among space enthusiasts was that space industrialization is feasible; it's just that we need the government to fund the heavy start-up costs that private industry can't or won't cover. In other words, as with railroads and nuclear power, give the industry a push beyond what the private capital market views as justified. OTRAG's investors, however, reject the need for a governmental push. They expect to make a lot of money selling launch-vehicle services in the 1980s, and they want no government interference in reaping those profits.

What this should be telling us—and the General Electrics, IBMs, TRWs, and Boeings—is that we are already very close to the point where commercial space activities can pay for themselves. The markets for communications satellites and earth-resources-sensing satellites are themselves already well developed. Orbital materials processing and solar power production show immense potential. Do we really need government involvement to push these things along? And do we want to pay the long-term price this involvement will very probably entail?

No one can say for sure what these consequences would be. But based on the historical precedents, might we not anticipate:

- the emergence of government-franchised exclusive monopolies in solar power and communications satellites;
- manufacturing cartels in space-processing activities, owning the limited number of facilities made available on government-owned space stations;
- technological and economic stagnation in space transportation under the heavy hand of government regulation;
- unanticipated, adverse social consequences such as total government control of land use, farming, and population movements, based on remote-sensing data;
- a popular backlash against space industrialization, as an elitist rip-off of tax money for the benefit of wealthy industrialists and technocrats.

Is government help really worth such costs? Should the taxpayers really be asked to underwrite a commercially viable endeavor? Frankly, I don't think so. It would make far more sense to pay heed to the lessons of history.



Editor Robert Poole, Jr. holds two engineering degrees from MIT and spent seven years in the aerospace/defense industry. This article is adapted from a presentation at an American Astronautical Society conference, The Industrialization of Space.

This prime business site will soon be available.
Next year the first of a fleet of reusable Space Shuttle orbiters built by Rockwell International for NASA will begin making routine trips to and from space. Very soon, science and then business will be able to utilize more economically the near-perfect vacuum, zero gravity, constant solar power, and true global perspective offered by low Earth orbit. For more about space development and the diverse company that supports it, write: Rockwell International, Dept. 815J, 600 Grant St., Pittsburgh, PA 15219.
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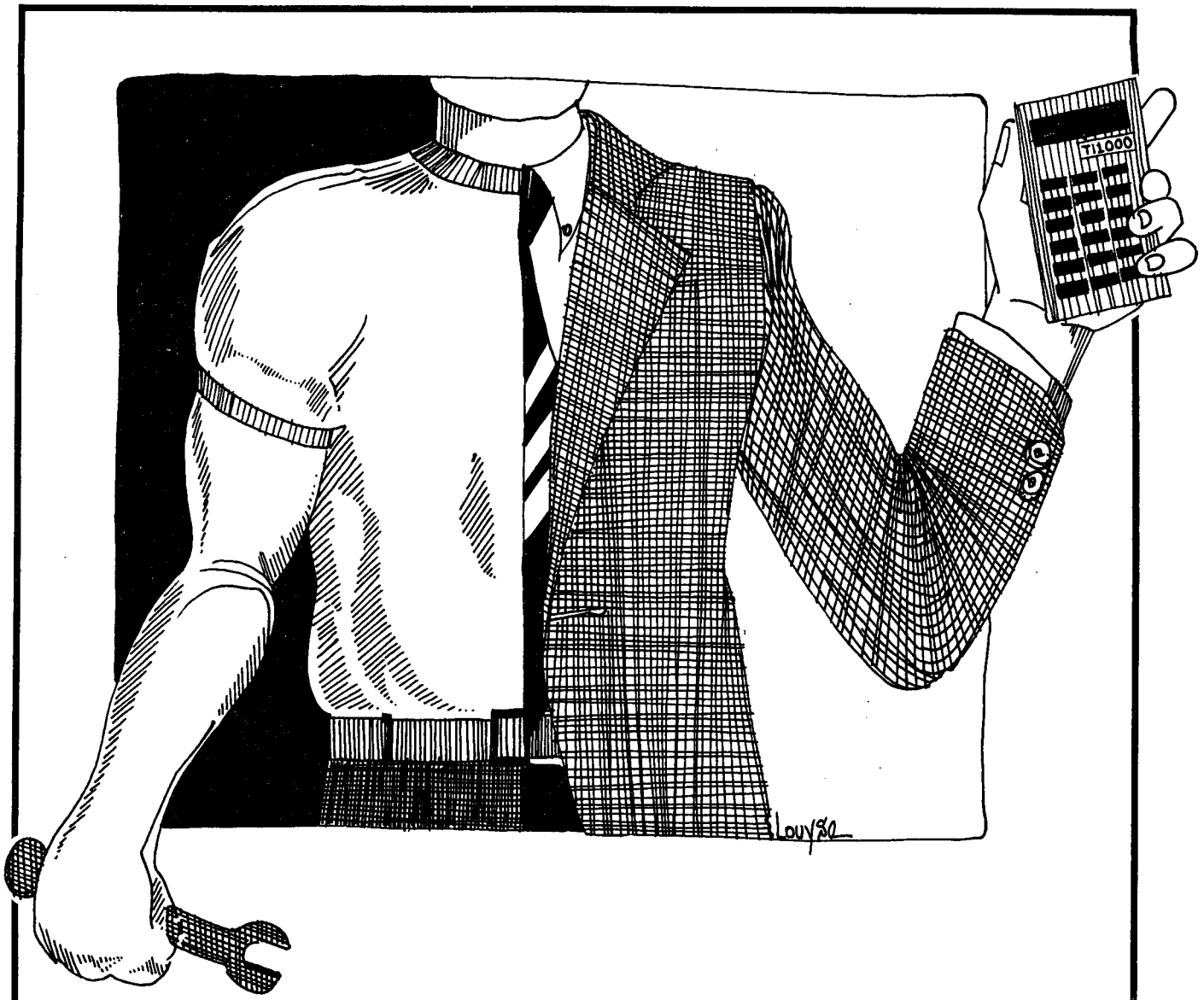


Who Does Make Cars?

by James H. Yoke

AN OPENING STATEMENT may forever determine the direction of a following discussion. If I use the term *workers* and imply that the executives don't work, if I speak of those who make the cars and limit the definition to only those who touch the parts with their bare hands, then the emotional content and rational implication are severely narrowed.

The "workers" that beat the steel into the shape of a ploughshare have been accorded a special place in the socialist system of values. The "worker" that puts the bolt in

Illustration by Katherine Louise

a hole and draws it tight, fastening the fender to the frame of a car, is the "builder" in socialist society. The idea that the man riding the fork truck, tending the assembly line, tamping sand in the foundry, poking bolts in holes, or taking stampings out of a punch press actually builds cars, television sets, or widgets is at the very center of all of the dogma of the socialist.

Who does make cars? Perhaps we can see best by this little scenario.

Several years ago Ford Motor Company built a new manufacturing plant in Indianapolis. A plant of this size and nature usually takes years of planning and several approvals at levels at or just below the president and the board of directors.

Cost analysis, amortization of investment, profitability, social problems of the area, labor supply, and many other things were discussed, written up in reports, signed, approved or rewritten, maybe disapproved. Meanwhile, engineers developed the manufacturing process concepts. Architects made preliminary building designs. Transportation specialists analyzed how this fit into the total manufacturing capability of the corporation. And money was obtained and allocated.

It was finally decided that, among other things, bolts and steering gear-steering column-steering wheel assemblies would be manufactured at the Indianapolis plant. The plant was ordered designed and built, and purchasing ordered some fifteen bolt-making machines to be delivered as the building was finished—two years away.

The bolt-making machine, once installed, sucks in long coils of steel, like some boor gulping a long spaghetti pasta. Wire, it is called. But it may be 1,500 feet long and even ¾ of an inch in diameter, although most are smaller. The machine chops a length of steel off of the coil of wire. With a solid thunk, it squashes one end down into a hexagonal head. It then sends this blank around to the other end. Here it is automatically fed between a couple of flat dies with deep angular grooves cut in their faces. The bolt goes through those dies much like a small piece of modeling clay in a child's hands.

Imagine the child pressing his hands hard on the lump of clay and stroking his hands, one against the other, until the clay—now in a long roll—pops out at the end of his fingers. So it is with the bolt, only now it has threads on it.

The machines, 15 of them, sit all day spitting out finished bolts with a satisfying ka-chunk, kachunk. Perhaps a bolt a second per machine. The bolts fall in bins and are hauled away by fork trucks. Hundreds of different bins of bolts of different lengths and diameters and thread types, made from many different steel alloys, are stored separately for future use.

At other places at other times a car was planned, a steering gear was designed, parts were ordered made, production started, and parts shipped to Indianapolis — each part having a long complex history of design, test, scheduling, manufacturing, and shipment.

The engineers decided that the cover plate of the steering gear required bolts of a certain length, diameter, thread type, steel alloy, and that it should be tightened to a prescribed torque. A production line was designed, assembly sequences worked out, and work stations arranged. Personnel was ordered to hire a workforce to man the production line. All of the parts were ordered brought to the line. The foreman was briefed by the production bosses and the engineers. An air-driven wrench was hung above a station to tighten the four bolts that hold the cover plate on the gear box.

The morning finally arrives; the new employees are herded up to the line and assigned stations. Joe Smith is told that as the nearly finished assembly nears his station, Sam Jones on his right will place the cover on. When it gets to Smith, Smith is to take four bolts out of the bin on his left, put them in those holes, take that wrench hanging there in front of him, put it on the bolts, and pull the trigger. When the wrench rattles like crazy, take it off the bolt, for the bolt is properly tight.

The line is started slowly. The foreman frets, checking this and that. The engineers eagerly grab the first assembly off the line to see if it will work. Quality control checks bolt torque and adjusts Joe's wrench. And Joe becomes a trained and effective unit at the very bottom of our productive enterprise.

Joe puts bolts in holes. Not cruel, not callous, but factual. Joe puts bolts that he does not understand, into parts that he does not understand, with a wrench that he does not understand, in an infinitely complex productive system that is incomprehensible to him.

The moral of this little story? Does Joe build cars? No! Absolutely not!

Does any one of the participants of this story build cars? No, again! They run fork trucks; they organize assembly lines; they design gear boxes, order bolt machines, make cost reports.

Who does build cars? It must be obvious. Henry Ford II, his vice-presidents, the chairman of the board, and the board of directors can't build *a* car any better than the bolt-putter-inner. They can and do, though, build millions of cars. It can only be properly said of this small group that "they build cars."

There is an old story about three men working on a cathedral. The first was asked what he was doing. He said, "I'm laying brick." The second was asked what he was doing. He said, "I'm plastering the wall." The third, who was carrying hod, was asked what he was doing. He said, "I'm building a cathedral."

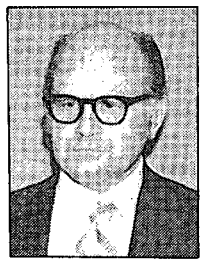
The third man's answer is a useful adjustment that most of us find satisfying and meaningful in our daily work. The story is used in sermons, speeches, and conversations invariably to teach men the "value" of the labor and laborer in the grand process of creation, the daily lot of most of us. The story lends meaning and purpose to lives and labor which may be humdrum and on which, since very common, the law of supply and demand sets a low dollar value.

The third man's answer is not an economic, social, or organizational reality. In fact, the third man does nothing more than carry hod from the mixing box to the masons on the north wall, then the east wall, then the south, in an endless cycle. He does not build the cathedral any more than he who put the bolt in the hole built a car. The cardinal, the bishop, or a building committee builds the cathedral. Seldom does even the architect have the freedom and authority to be possessive about "his" creation.

The sentimental, mystical, and more than a little deviant love affair the socialist has with the "workers" is at the root of so very much of the thinking today. And it does determine the direction, and the end, of the line of reasoning.

Does objection to the sentimental fiction make one some sort of an elitist? I answer that obliquely, that I fancy I'm not nearly as quick to trample on that "workman's" right to live by his own lights as is any socialist I know or have read.

That workman has the right to decide whether he will fasten his own seat belt.



James Yoke is a mechanical engineer and has worked in the architectural and construction industry for many years.

Benjamin Tucker's LIBERTY

by Carl Watner

I was the first American—I may say the first Anglo-Saxon—to start an avowedly Anarchistic newspaper printed in the English language. I am still the editor, publisher and proprietor of that paper. It is everywhere regarded as the pioneer and principal organ of modern individualist Anarchism. I either am, or have been, the publisher of the chief Anarchistic works in the English language. I am the author of the most widely-accepted English text-book of Anarchism. I have enjoyed the friendship, had the benefit of instruction, and have carefully studied the works, of those Americans from whom the Anarchists have largely derived their beliefs—Josiah Warren, Stephen Pearl Andrews, Lysander Spooner, and Colonel William B. Greene. I am the translator into English of some of the principal works of P. J. Proudhon, who was the first writer in any language to declare himself an Anarchist. I am acquainted, perhaps better than any other man, with the English-speaking Anarchists of the United States.

Such credentials, cited in a letter to the *New York Tribune* on December 4, 1898, obviously entitle their holder to claim a prominent role in the libertarian-anarchist tradition in the United States. Benjamin Tucker (1854-1939), author, editor, and anarchist, started in August 1881 a little fortnightly journal called *Liberty*. Its purpose was to contribute to the solution of social problems by threshing out the ultimate implications of the battle against authority. The journal continued to appear until 1908. In the words of Paul Avrich, a contemporary historian of anarchism, "*Liberty* was simply the best Anarchist newspaper ever to appear in the English language." And *Liberty* well reflected Tucker's ideas.

ANARCHISM

Tucker made it abundantly clear in his first issue that his journal would be edited to suit himself and not his readers. No subscriber or body of subscribers would be allowed to govern his course, dictate his policy, or prescribe his methods. It was Tucker's very definite intention to publish *Liberty* so as to spread certain ideas.

> The purpose of *Liberty*, boiled down to its ultimate essence, is the abolition of authority. . . . *Liberty* denies the authority of anybody's god to bind those who do not accept it through persuasion and natural selection. *Liberty* denies the authority of anybody's State to bind those who do not lend voluntary allegiance to it. *Liberty* denies the authority of anybody's "public opinion," "social custom," "consensus of the competent," and all other fashionable or scholarly despot, to step between the individual and his free option in all things.

For Tucker, anarchism meant the absence of State and government but not necessarily the abolition of all laws and all coercion. He maintained that anarchists oppose government, not because they disbelieve in punishment of crime and resistance to aggression, but because they disbelieve in compulsory protection. Tucker was one of the first people ever to argue that defense is a service just like any other service, which should be and can be provided by private agencies supported by voluntary patronage. This advocacy was based on the definition of government as "the subjection of the non-invasive individual to a will not his own." The State is a compulsory institution to which all are forced to belong and which all are compelled to support.

When Tucker inaugurated his journal, his starting point was the absolute sovereignty of every individual. He and his readers were the sternest enemies of invasion of person and property, making war upon the State as the chief invader. Tucker realized that criminals would remain even after governments disappeared, but his position was that, "of the really serious and important acts of invasion of individual sovereignty, at least nine-

tenths are committed by organized State governments or through privileges granted by them, and that the governmental idea, with the State as its principal embodiment, is the efficient cause of almost all of our social evils."

ARE THERE RIGHTS?

Tucker originally relied on the theory of natural rights to defend anarchism and attack government, but it was not until 1887 that the question of natural rights and obligations was thoroughly threshed out in *Liberty*. In the process, Tucker became a convert to Max Stirner's variety of egoism.

> From the start [of *Liberty*] I have known that self-interest is the mainspring of conduct and that the ego is supreme. I had not, however, carefully thought out or even considered the bearing of this philosophy upon the question of obligation. I took society for granted and assumed the desire of man for society, and it was from this standpoint that I had loosely talked of natural rights. But Stirner's book [*The Ego and His Own*] caused me to ask myself: If the individual does not wish society, is he under any obligation to act socially? And I no sooner asked it than I answered it in the negative. ***At no time have I answered it in the affirmative.*** . . . I have since [1886] seen that my use of the word right in those days was entirely improper, and this, coupled with a steadily-clearing perception of the logic of egoism, is the only change my ethical opinions have undergone since I started *Liberty*.

In later years, Tucker exemplified his new position by questioning the supporters of natural rights.

> Why is one man bound to refrain from injuring another? That is the question which the moralists must answer. I know plenty of reasons why it is expedient for one man to refrain from injuring another. Therefore I advise him to refrain. But if my reasons do not commend themselves to his judgement; if my view of expediency does not coincide with his,—what obligation is there upon him to refrain? . . . I see no reason, as far as moral obligation is concerned, why one [man] should not subordinate or destroy the other. But if each of these men can be made to see that the other's free life is helpful to him, then they will agree not to invade each other; in other words, they will equalize their existences, or rights to existence by contract. . . . Before contract is the right of might. Contract is the voluntary suspension of the right to might. The power secured by such suspension we may call the right of contract. These two rights—the right of might and the right of contract—are the only rights that ever have been or ever can be. So-called moral rights have no existence.

Thus Tucker concluded that rights begin only with convention. They are not liberties that exist naturally but liberties that are created by mutual guarantee. So he no longer defended property as a natural right but declared that property is a social convention.

Having abandoned natural right as the basis of his anarchism, Tucker replaced it with the concept of equal liberty. "It is true," he claimed, "that Anarchism does not recognize the principle of human rights. But it recognizes human equality as a necessity of stable society." The only compulsion of individuals that his anarchism recognized was that by which individuals would have to refrain from violating the principle of equal liberty. The social convention of equal liberty is to be protected, not because it is a social convention, but because it is equal liberty—because it is anarchism itself.

ANARCHIST NUANCES

During the subsequent years of *Liberty*, Tucker deviated in other ways from his earlier anarchism based on individual sovereignty. He denied that the thing fundamentally desirable is the minimum of invasion. Having come to believe, within Stirner's framework, that the ultimate end of human endeavor is the minimization of pain, he reasoned that we aim to decrease invasion because, as a rule, invasion increases the total of pain. Despite the immense importance he placed on the rule of noninvasion, it was not an absolute for him. He argued that there are exceptional cases where invasion—that is, coercion of the noninvasive—lessens aggregate pain and is therefore justifiable.

In 1890, Tucker reprinted a short article that expressed his own thoughts about children and parents: "that parents have a certain lien upon their children, at least as long as their children lean upon them." Later he emphasized that the child, like the adult, has no right to life but should be accorded the immunity from assault or invasion due all human beings. In May 1895, Tucker reprinted the letter of an English individualist dealing with the question of parental responsibility for support of children. Tucker agreed with the conclusion that we must not interfere to prevent neglect but only to repress positive invasion and that no person, parent or not, may be compelled to support any helpless being, of whatever age or circumstance, unless he has made that being helpless by some invasive act.

Some months later, Tucker reconsidered his position and came to the conclusion that, since the mother owns the child, parental invasion is not to be prohibited. Thus a mother who throws her baby into a fire is not acting aggressively; she is only handling her property as she sees fit. Tucker maintained that his change of opinion consisted "simply in the substitution of certainty for doubt as to the non-invasive character of parental cruelty—a substitution which involved the conclusion that parental cruelty was not to be prohibited, since third parties need not consider the danger to organisms [children] that were outside the bounds of societal protection."

In the early years of *Liberty*, Tucker reviewed Lysander Spooner's pamphlet on the copyright question, disagreeing with his anarchist mentor. Spooner held that scientists and inventors should have a right of perpetual property in their discoveries and inventions, but Tucker could find

> no more justification for the claim of the discoverer of an idea to exclusive use of it than there would have been for a claim on the part of the man who first struck oil to ownership of the entire oil region or petroleum product. The central injustice of copyright and patent law is that it compels the race to pay an individual through a long term of years a monopoly price for knowledge that he has discovered today, although some other man or men very probably would have discovered it tomorrow.... From the justice and social necessity of property in concrete things, we have erroneously assumed the justice and social necessity of property in abstract things, that is, of property in ideas, with the result of nullifying to a large and lamentable extent that fortunate element in the nature of things, in this case not hypothetical but real, namely the immeasurably fruitful possibility of the use of abstract things by any number of individuals in any number of places at precisely the same time, without in the slightest degree impairing the use thereof by any single individual. The "raison d'etre" of property is found in the very fact that there is no such possibility,—in the fact that it is impossible in the nature of things for concrete objects to be used in different places at the same time.

MONOPOLY

When Spooner's reasoning in *Intellectual Property* was pitted against Tucker's argument, Tucker announced that Spooner's work was positively foolish because it was fundamentally foolish—that is to say, its discussion of the acquisition of the right of property starts with a basic proposition that must be looked upon by all consistent Anarchists as obvious nonsense. I quote this basic proposition. "The natural wealth of the world belongs to those who first take possession of it.... So much natural wealth, remaining unpossessed, as any one can take possession of first, becomes absolutely his property." In interpretation of this, Mr. Spooner defines taking possession of a thing as the bestowing of valuable labor upon it, such, for instance, in the case of land, as cutting down the trees or building a fence around it. What follows from this? Evidently that a man may go to a piece of vacant land and fence it off; that he may then go to a second piece and fence that off; then to a third, and fence that off; then to a fourth, a fifth, a hundredth, a thousandth, fencing them all off; that, unable to fence off himself as many as he wishes, he may hire other men to do the fencing for him; and that then he may stand back and bar all other men from using these lands, or admit them as tenants at such rental as he may choose to extract. Now, if this be true, what becomes of the Anarchistic doctrine of occupancy and use as the basis and limit of land ownership?

Tucker rejected Spooner's argument in favor of basing land ownership on occupancy and use. In this he followed the teachings of Josiah Warren, who contended that natural wealth is not property at all and that neither the State nor the individual can set a price upon it without violating the first principle of commercial justice, that cost is the equitable limit of price. Under this theory, tenants owe their landlords no rent, since only the tenants, or actual occupiers of the land, *own* the land.

To study *Liberty* is to touch on practically every social question of its era.

In addition to land monopoly and patent-copyright monopoly, Tucker denounced the banking monopoly privileges granted by the government. Being opposed to governmental compulsion, he objected to the prohibition of any voluntary currency or arrangements that the people might make for and among themselves. Free banking and free money meant free trade carried into finance, unlimited competition in the business of making money, and as a result the utter rout of inferior and usurious currencies by the virtues of the cheapest and the best. While Tucker rejected the claim that one has a moral right to engage in usury, he did not advocate any method of abolishing it save the removal of all restrictions preventing the free action of natural principles. "To attempt to suppress usury by statute is outrageous because tyrannical, and foolish because ineffectual."

"ADVANCED THOUGHT"

To study *Liberty* is to touch on practically every social question of its era. During his anarchist career, Tucker expressed interest in a wide variety of topics. During the early years, space in *Liberty* was devoted to the social revolutionaries, and Tucker was a follower of the activities of such internationally famed anarchists as Elisée Réclus, Peter Kropotkin, and Michael Bakunin. Tucker proudly published and reprinted some of the classics of the English-speaking libertarian movement, such as Spooner's *Natural Law* and *A Letter to Grover Cleveland*. *Liberty* also served as a forum for publishing and publicizing what he called advanced literature—literature which in religion and morals led away from superstition, in politics led away from government, and in art led away from tradition.

Tucker promoted similar ends by publishing books, such as his own anarchist textbook, *Instead of a Book*; Emile Zola's *Modern Marriage*; Paul Eltzbacher's *Anarchism*; and Stirner's *The Ego and His Own*. The appearance of this latter book was, in Tucker's opinion, his most notable contribution in behalf of anarchism. Tucker operated a book store in New York City that eventually came to house a large collection of such literature.

When Tucker's bookstore was destroyed by fire in 1908, he retired to Europe, gave up publishing *Liberty*, and abandoned the anarchist movement in the United States. Some would maintain that he had already abandoned libertarianism. In his early years Tucker had written that "it is better to suffer great inconveniences than the evils engendered by the violation of individual rights." But he eventually came to disagree with this position, calling the person who would do justice though the heavens fall, a person with justice on the brain. Nevertheless, he maintained a life-long emphasis on individual sovereignty and noninvasion, even though tempered by what he understood to be the implications of Stirner's egoism. And, with his *Liberty*, he contributed mightily to the libertarian heritage. ◻

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Amidst All the Other Problems of Collective Decisionmaking, the Voting Process Itself Permits Logical Inconsistencies

THE PARADOX OF VOTING

by Don Reading

A state has on its ballot a Proposition 13-style measure to limit property taxes and a state-devised, "moderate" countermeasure. In a pre-election poll, voters are asked to make separate choices between "13" and the moderate measure, the moderate and no change, and "13" and no change. A majority prefers "13" to the moderate measure and the moderate to no change, so "13" would have to win over no change, right? Not necessarily. Without any inconsistency on their part, the same group of respondents can show a majority preferring no change *over the Proposition 13 measure.*

In the summer of 1976, a sample vote on the upcoming presidential elections was taken in a university class of 22 students. The paired votes among the three leading candidates were: Ford 14, Carter 8; and Carter 12, Reagan 10; but Reagan 13, Ford 9.

IMMEDIATELY AFTER AN ELECTION, the "what-if" columns and commentaries begin to appear. In general, they decry the inequities and vicissitudes of the election process. The close Ford-Carter election in 1976 provides an excellent example. If a mere 8,000 voters in both Ohio and Hawaii had voted for Ford rather than Carter, Ford would have won in the electoral college—even though losing the popular vote. And so, the questions: What if there had been no televised presidential debates, or Ford had not made his Eastern European "blooper" in the second debate? Does Carter owe special favors to blacks (he lost the white vote) or concessions to labor (the labor vote was the difference in the industrialized Midwest) or cabinet positions to Baptists or Jews? Was Ford's use of advertising counterproductive in relation to the Carter *Playboy* interview? Was the vice-presidential selection the deciding factor? Did Watergate play an important role in Ford's defeat?

These questions, and many others concerning the election process, have a common underlying theme. Each is based on the fact that most politicians are elected for reasons other than something called the real issues, that election outcomes swing on minor issues with little or no substance. And this casts a foreboding shadow over the ability of democracy to function in a rational fashion. But, although the questions thus raised about collective decisions are serious enough, there is a more fundamental problem encountered in arriving at group consensus. It has been discussed in literature since the 18th century and is generally known today as Arrow's Impossibility Theorem (after economist and Nobel Laureate Kenneth Arrow) or simply the paradox of voting.

Irrational or illogical outcomes can and do appear because of an inherent paradox in group decisionmaking.

STRANGE RESULTS

The academic literature of voting theory consists of a complex system of axioms, conditions, and proofs, but we don't need to know all of this to understand the basic problem involved in the paradox of collective consensus. Under certain conditions—conditions that are present in the pattern of our contemporary political process—irrational or illogical outcomes can and do appear because of an inherent paradox in group decisionmaking. The paradox does not involve any of the commonly heard criticisms of the voting process but results from what mathematicians call *intransitivity.*

Transitivity, when it comes to choices, amounts to logical consistency of choices or preferences. For instance, suppose you prefer classical music to jazz and jazz to rock. Then it is reasonable that, given a choice between classical and rock, you would show a preference for classical music. This logical consistency of choices is the transitive result. If, however—even after admitting that you like classical better than jazz and jazz better than rock—you choose rock over classical, the result would be inconsistent and would be called intransitive. The heart of the paradox of voting is this: even when each person within a group is logically consistent, or transitive, about his or her preferences, the individuals can, through the voting process, produce a collective result that is *in*transitive.

A class of students choosing Ford over Carter, Carter over Reagan, then *Reagan* over *Ford* is an example of an intransitive group outcome. Common sense and logic would seem to say that if Ford was preferred to Carter and Carter preferred to Reagan, then Ford would naturally be the winner in an election with Reagan. But the mock election showed Reagan the victor by four votes. When confronted with this result, the students' immediate reaction was that some members of the class had been illogical in their choice patterns and switched allegiances when voting different pairs. But this, as the paradox of voting reveals, need not be the case. Each class member can be consistent in his in-

dividual voting preference, and yet an inconsistent result can occur when the group attempts to make a collective decision.

To see the point, assume the class has only 3 members rather than 22. Suppose one student prefers Ford over Carter and Carter over Reagan; another student prefers Carter over Reagan and Reagan over Ford; and the third prefers Reagan over Ford and Ford over Carter. So we have:

Student 1	Ford, Carter, Reagan
Student 2	Carter, Reagan, Ford
Student 3	Reagan, Ford, Carter

But if the students vote for the three candidates in pairs, an intransitive result occurs. In the race between Ford and Carter, students one and three vote for Ford and student two for Carter. The winner is Ford: two votes to one. In the Carter-Reagan contest, students one and two vote for Carter and student three for Reagan. The winner is Carter: two votes to one. But in the Ford-Reagan vote—with Ford the rational winner because the three had selected Ford over Carter and then Carter over Reagan—the outcome is the opposite. Student one votes for Ford but students two and three, each remaining consistent in his preferences, vote for Reagan, who thus emerges the winner over Ford.

CONGRESSIONAL PARADOX

Computer models have been used to find that when there are three individuals (or motions, amendments, or items) and voters have what are called strong preference orderings—which means they know what they want—the inconsistent, or intransitive, results will exceed eight percent. Examples of these intransitivities have been found in amendment voting in the US Senate and various state legislatures, as well as in such nonpolitical activities as scoring track meets.

In 1955 the Senate passed a five-year $18 billion highway bill offered by Senator Gore of Tennessee—a case that typifies a nonrational outcome. On this issue the Senate was divided into three basic blocks—northern Democrats, southern Democrats, and Republicans. The original bill was offered with the provision that fair-pay standards (the Davis-Bacon Act, 1931) would be included. The Republicans were opposed to the bill, but if it were to pass they wanted Davis-Bacon to apply. The southern Democrats liked the bill without Davis-Bacon and felt no bill was better than one with fair-pay standards. The northern Democrats wanted the bill with the provision but preferred the bill without Davis-Bacon to no bill at all:

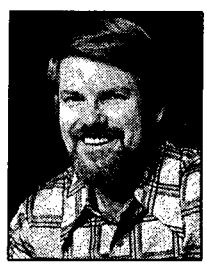
Republicans	No bill, bill *with* Davis-Bacon, bill *without* Davis-Bacon
Northern Democrats	Bill *with* Davis-Bacon, bill *without* Davis-Bacon, no bill
Southern Democrats	Bill *without* Davis-Bacon, no bill, bill *with* Davis-Bacon

The Senate would defeat the bill if offered with the Davis-Bacon provision—gaining support from only the Northern Democrats. In voting on the inclusion of Davis-Bacon, the provision would pass with only the Southern Democrats in opposition. As a group, the collective judgment of the Senate was to prefer no bill to the bill with the provision and the bill with the provision to the bill without. Therefore, for a logical outcome, it would seem no bill would be preferred to the bill without the Davis-Bacon provision. The actual outcome was just the opposite—the bill without the Davis-Bacon provision passed, not even requiring a roll call.

Such situations make it possible for voters to deliberately vote against their preference on a given issue in order to tilt the outcome in their favor. And this in fact happens. A classic example is an amendment by conservative Republicans attached to the proposed 17th Amendment to the Constitution, which deals with the direct election of Senators. The proposed amendment by these Republicans attracted liberal Republicans and alienated enough southern Democrats who would otherwise have supported passage, thus delaying passage in the Senate for nearly 10 years.

Critics from a wide political spectrum have challenged the voting system for a multitude of sins, ranging from slick ad campaigns to the outright stealing of votes. But the paradox of voting shows that, amid all the other problems of collective decisionmaking, the voting process itself permits logical inconsistencies. Schemes such as maximizing social welfare through voting can often lead to irrational, intransitive outcomes, even when all affected persons are given an equal opportunity to vote. If each member of the group is rational and consistent in his individual preference patterns, the collective voting method still has the possibility of irrational and inconsistent results.

Don Reading is an associate professor of economics at Idaho State University. His work has been published in various academic journals.



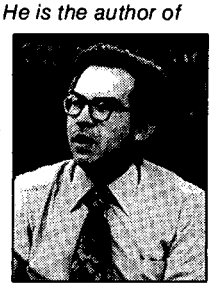
Vajk

(*Continued from p. 23.*)

the establishment of facilities in space and of advanced launch vehicles. Within the next two or three decades, the costs of going into space would be low enough to reduce the front-end costs of nonterrestrial mining to a level attractive to private investors. Asteroidal mining of nickel for importation to earth could thus become a reality by the turn of the century, even if solar power satellites prove not to be economically or environmentally sound. Space tourism will be an inevitable spinoff of the reduced costs of transportation through space. Without solar power satellites it is likely that the number of people living and working in space would not grow as rapidly. New commercial ventures and opportunities, however, can be expected to proliferate rapidly, once life in space becomes routine for even a few hundred people. The economy of North America diversified and proliferated independently of Europe once the Industrial Revolution arrived on its shores. The same is likely to happen with industries in space.

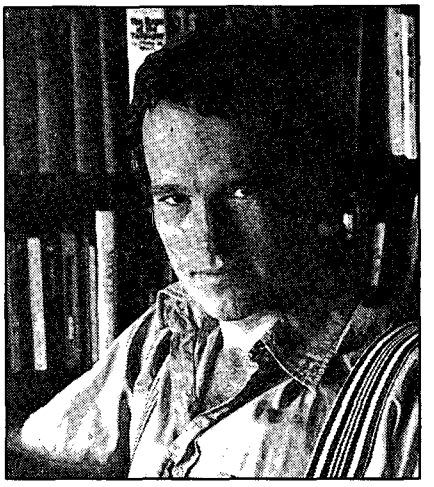
Why space industrialization? Because we want to go for the pure joy and fun of it, and we can pay our way while we do it. Whether or not we go, the long-term prospects for terrestrial civilization seem to be very good. Political factors (such as the possibility of a nuclear holocaust) remain, as they have always been, the wild card in the deck. As a space enthusiast, however, I feel I can face the future with confidence: we're on our way.

J. Peter Vajk has a Ph.D. in theoretical physics from Princeton. For eight years at the Lawrence Livermore Laboratory and now at Science Applications, he has been involved in studying space colonization and industrialization. He is the author of the recently published Doomsday Has Been Cancelled. *This article is adapted from one published in* Advances in the Astronautical Sciences, *vol. 36,* © *1978 by the American Astronautical Society.*



Is Balancing the Budget Really a Bad Idea?

viewpoint



James Dale Davidson

Whatever else Gov. Jerry Brown has done by his trumpeted endorsement of the National Taxpayers Union's call for a constitutional amendment to balance the federal budget, he has provided another illustration of Alexis de Tocqueville's sure grasp of politics. Tocqueville knew that the supporters of a cause are apt to be deceived because "they always only think of the pleasure they themselves derive from the speech of their great orator, and never of the dangerous excitement he arouses in their opponents."

Governor Brown's speech on the need to radically change the fiscal policies in Washington was indeed a great one. He said what we at NTU have been inviting political leaders of his stature to say for the last four years. He said it well enough to be heard over the whole din of contentions in this contentious country. Whether he spoke from conviction or merely to seize what he correctly perceives as an opportunity to represent the views of the overwhelming majority of the public, we applaud his actions. Our only regret is that he spoke too well, arousing the excitement of the *Washington Post* editorial writers and others whose thinking on fiscal matters may be slightly out of date.

While opponents of balancing the budget such as the *Washington Post* speak disparagingly of "the economic theology of the Hoover era and the 19th Century," it is they whose thinking is backward-looking. The very mention of Hoover is indicative of an economic mind-set informed by the conditions of 50 years ago. Like French generals preparing to fight the last war, opponents of fiscal responsibility under today's conditions are trying to combat the future with the weapons of the past.

Lord Keynes is by now a "defunct economist" himself, and any society that insists upon operating its financial affairs upon the basis of his most problematic ideas is also moving toward being defunct. The idea that excessive government spending is needed to fight recession has been ruled out of order by experience. It is precisely the deficits, now become habitual, and the inflation they generate that are the cause of recessions, and perhaps ultimately of a depression. The American people understand this. That is why an overwhelming majority of all parties and backgrounds support decisive action to outlaw deficit spending. They recognize the need for fiscal balance not because they are old-fashioned but because they have lived with the failed policies and know them for what they are.

No less an observer than British Prime Minister James Callaghan has said: "We used to think that you could spend your way out of a recession and increase employment by cutting taxes and boosting government spending. I tell you, in all candor that that option no longer exists, and that insofar as it ever did exist it only worked by injecting bigger doses of inflation into the economy followed by higher levels of unemployment as the next step. That is the history of the past 20 years." So it is. Only persons thinking the thoughts of 50 years ago could fail to see it.

Another curious aspect of the controversy over NTU's movement to balance the budget is that opponents invariably affect an air of sober responsibility, yet often themselves seem little touched by the spirit they invoke. For example, the *Post* claims that there is a confusion in the constitutional-convention calls that have been issued by 27 state legislatures. The editorial writers complain that the resolutions mandate a balanced budget "without defining one." This is cited as an indication that the process of calling for a constitutional convention has been undertaken "with little thought."

In fact, the matter is more nearly the opposite. The wording of these resolutions has been perfected after close study of the constitutional requirements for convening a convention. It is the opinion of most legal scholars, including those who authored a recent American Bar Association report—"Amendment of the Constitution by the Convention Method under Article V"—that a call for a convention must not be overly specific. If it were, it might be ruled invalid. The legislatures do not write a proposed amendment in their call; they merely mandate action to correct a given defect.

It is our judgment that 27 resolutions calling for a constitutional convention to balance the budget meet this standard. That the *Post* would take up the line of criticism it has, suggests that whoever wrote the editorial assumed a posture of authority without being responsible enough to investigate the issue closely.

It is not true, as claimed, that the resolutions pose language problems, other than perhaps the problems of style inherent in legislative prose. Neither is it true that enactment of a constitutional amendment outlawing deficit spending would inhibit politicians from dealing flexibly with varying economic conditions. People advancing this argument ignore the fact that Congress could increase expenditures within limits by working with a reserve fund. As Leon Sutton has written, "Building up a reserve fund for use in economically poor times is a standard accounting practice and has been used since at least the time of Joseph among the Pharaohs of Egypt. It in no way would violate an amendment requiring a balanced budget (unless, of course, it was specifically worded to exclude or limit the size of any reserve fund)." Further, every proposal before Congress provides for a temporary suspension of the balanced-budget requirement in the event of a genuine emergency.

A balanced-budget amendment would provide ample flexibility in enabling the Congress to operate the government smoothly. It would not require that actual programmatic expenditures equal total tax income in every given year. But it would prevent the excessive deficits that Congress and the president have made a matter of standard practice. It would reduce the power of special interests to obtain increased appropriations benefiting themselves while disguising the costs—in the form of inflation—that are spread throughout the society. As Governor Brown correctly points out, a constitu-

(*Continued on p. 48.*)

money

Double Your Money Every Year

Futures markets can be used *to double your money every year*—but within the context of a conservative strategy designed for capital preservation *first* and profit *second.*

The first objective of any investment strategy designed to deal with today's inflationary world *must be* to conserve capital. This means placing the bulk of one's portfolio in assets that will retain their purchasing power over the longterm. This means gold, silver and other precious metals, and Swiss francs. These core holdings, which should account for 25 to 50 percent of one's total portfolio, are designed to be held until the end of the monetary crisis.

It is also possible, even desirable, to trade in a variety of commodities to increase one's overall purchasing power. When one can buy the physical commodity (for example, gold, silver, or stocks and bonds), provided one buys with the correct timing, trading long-term and intermediate-term cycles, one comes as close as is possible to the elusive "risk-free" investment.

Long-term purchases are made at the beginning of a bull market in a commodity or stock. Such a bull market usually lasts around two and a half years, so purchases made in this category don't need much attention for some time. While you're sitting on them, they're appreciating nicely because of the bull market.

Intermediate-term purchases are made with a much shorter time horizon. Gold, while in its bull market that began at $103 per ounce, has moved in *intermediate cycles* within that long-term trend. For example, gold fell from $246 per ounce to $193 last November in an intermediate correction. Intermediate traders of gold would have sold at over $240 and bought back when it dropped under $200. Long-term traders would have sat through the moves, both up and down.

Clearly, the shorter the time horizon, the greater is the risk involved and the attention that must be given to one's holdings. By the same token, the potential rewards are commensurately greater. Riskiest of all, with the highest potential rewards (and losses) is, of course, futures trading.

The trick is to construct a portfolio that is centered around capital preservation but still has sufficient flexibility to take advantage of the high-risk high-profit opportunities. Obviously, the bulk of one's assets (at least 85 percent), should be in *low-risk* investments. One's assets might then be divided as follows:

• *Core holdings* (precious metals and Swiss francs to be held for the duration of the monetary crisis): 25-50 percent.

• *Long-term trading* (physical gold purchased at under $125, silver at under $5 per ounce, and other precious metals to be held for the duration of the current bull market): 25-50 percent.

The two above categories should account for 75 percent of one's total portfolio. Thus, three-quarters of one's total investments are earmarked for long-term capital preservation. Of the remaining quarter, 10-15 percent should go into intermediate-term trading; the remainder, with a maximum of 15 percent of the total, into futures markets.

With this division of assets, only 15 percent of one's wealth is exposed to serious risk; 75 percent is in very safe, sound, secure and low-risk areas; and that portion earmarked for intermediate-term trading is exposed to moderate risk. *Following such a conservative strategy, it is still possible to double your money every year.*

With carefully chosen futures contracts, it is possible to benefit from the wide fluctuations that inflation induces into all markets. Pinpointing movements of sufficient breadth to give a relatively safe and highly profitable trading spread opens up opportunities with, in the context of futures markets, relatively low risk. Nothing in futures markets is "risk-free," however. The substantial profits that are possible come from the leverage in futures trading. With just $1,000, you might control 25,000 pounds of copper worth over $18,000. Then, for every cent the price of copper rose you could gain $250; for every cent that it fell you could *lose* the same amount. The high profits that are possible lead many people to get carried away, with the result that they lose much more than they can afford. But following a few rules can minimize risk and maximize profits.

• *Don't put all your eggs in one basket.* Put a maximum of 15 percent of your portfolio into futures contracts—and only put half of that into any *one* commodity.

• *Limit your losses.* Always use a stop-loss in case the market runs in the direction opposite to that anticipated. The advantage is that you know what your maximum loss will be *in advance.* If you can't afford that loss, you shouldn't be in the market.

• *Don't be greedy.* The temptation is to stay in the market for an even greater rise than the one already experienced. If you bought a contract at 71c and sold it at 74c, then saw the price rise to 76c, don't regret it. The chances are that you wouldn't have sold at 76c. You'd have thought maybe it will go to 77c. Or 78c. You'd have hung on until the price dropped back to 74c—or lower.

• *Lock in your profits.* A stop-loss can be issued in reverse: to lock in your profits. It saves you from worrying too much about what's happening to the contract.

• *Extra liquidity.* If you only need to deposit $1,000 as margin, deposit $2,000, or have the additional money available in some liquid instrument such as short-term bills that pay interest. This reduces your return on funds invested, but it also gives you greater security and prevents you from overextending yourself.

• *Salt away some of your profits.* Don't reinvest everything. One of your aims is to make money; another one is to keep what you've made! When you make a dollar, keep half and only risk the other half. Next time around, if you lose, you're still 50 cents ahead.

If the 15 percent of your portfolio devoted to futures increases at 40 percent a month and the remaining 85 percent of your investments increase by 15 percent over the year, your total portfolio would have increased in value by 102 percent! And because of the way commodity markets are behaving, 1979 looks like a good year for an average monthly return of 40 percent on futures. Whether you make that depends, of course, on a number of factors—what futures are selected, how comfortable you are trading futures, to what extent you have access to such markets, and so on. But 1979 can be a prosperous year.

—Mark Tier

spotlight

Highway Crusader

A stark contrast to Ralph Nader is another highway safety advocate, a quiet, unassuming 61-year-old former TV repairman from the Bronx. With no money, no charisma, and no ideological axe to grind, Joseph Linko has nevertheless done much to identify and eliminate highway booby traps that take between 10,000 and 20,000 lives each year.

Were Joseph Linko a lawyer or engineer, his accomplishments in taking on highway bureaucracies would still be noteworthy. But his achievements seem nothing short of amazing when you realize that this man has only an eighth-grade education and no formal technical training. But he *does* have good common sense, a sharp eye for hazards, and the determination not to accept bureaucratic mumbo-jumbo as an excuse for inaction.

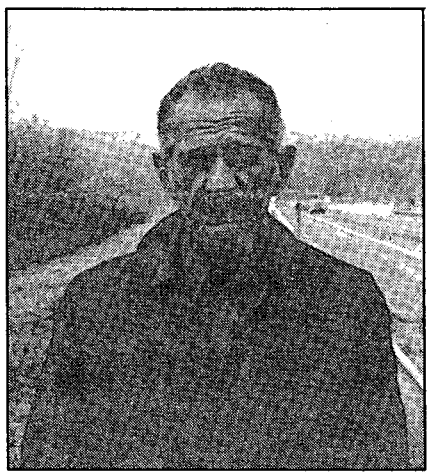
Linko's one-man campaign for safer highways began in 1962 when he noticed a monstrous concrete footing for a no-longer-existing sign, plunked just six inches from the edge of the pavement on the Cross-Bronx Expressway. He notified city and state engineers and officials, but nothing happened. Angered and frustrated, Linko began observing New York-area highways more closely—and found such booby traps all over the place.

"At my own expense I began to spend all my spare time taking photographs," he recalls. "I figured if I accumulated enough evidence, somebody would have to listen to me. It got to a point where I was taking pictures six to eight hours a day and weekends. There were so many serious hazards built into the highways that it seemed senseless. I mean, here we are spending so much of the taxpayers' money to construct expensive death traps, when we could spend so much *less* and do the job right."

Eventually Linko gave up on state officials and began writing to congressman and federal highway people. When two officials of the Bureau of Public Roads arranged for him to show his slides at a meeting of the American Association of State Highway Officials, all hell broke loose. Here was a private citizen denouncing highway builders for incorporating death traps into the new interstate highway system—and documenting his charges. That led to Linko's appearance in May, June, and July of 1967 before the Blatnik Committee of the US House—which led, in turn, to changes in design standards for the interstate system.

Unfortunately, Linko's fame was short-lived, and the reforms had no effect on state and local highways—or on already existing interstates. Having been sensitized to the problem, though, Linko was unwilling to give up. He continued taking photos, giving slide presentations, and writing letters to anyone who would listen. And here and there professors of safety engineering, insurance researchers, and occasional public officials began to listen.

Why are the highways festooned with death traps—steel signposts placed in *front* of guardrails, guardrails that end abruptly (thereby impaling off-course autos) instead of angling into the ground, signs mounted on separate posts when a bridge is readily available at the same location? It boils down to the lack of a single, responsible party operating a highway and assuming responsibility for its safety. As Linko puts it "No one is operating these highways; nobody knows what the other guy is doing."



Joseph Linko

Although an economist might suggest privatizing highways to correct this problem, Linko was on the right track in the early '70s when he proposed, in an interview with the *Weekly Underwriter*, that insurance companies refuse to reimburse the state government for damages to the highway from crashes when the cause is found to be improper highway design. "If the accident was the direct result of a built-in highway hazard, then the state should be held responsible. I think that if enough insurers would refuse to pay for highway damage and sue the state for the amount of the claim paid to the injured party, then maybe state officials might begin working faster to make the necessary changes."

Linko even went to the trouble of following up numerous accidents in the New York area, photographing the scene, and in cases of highway defects writing the insurance company involved, advising them not to pay the state and to countersue for the claims. But to no avail. He speculates that insurers are reluctant to challenge the states which regulate them.

With his safety crusade having displaced his TV repair job, Linko could no longer afford a car and began using public transportation. That led to his growing interest in the safety problems of buses and subways. At the same time his expanding network of contacts with safety professionals led several of them to create an institutional framework in which to carry on Linko's work—and to begin to reimburse some of his expenses. Thus was born, in 1976, the nonprofit Institute for Safety in Transportation, of which Linko is a director and vice-president. Its advisory board includes some of Linko's supporters in places like the Transportation Research Board, the Flight Safety Foundation, the National Transportation Safety Board, and various universities and consulting firms.

The institute carries out research on safety-related problems, issuing short and pointed Advisory Memoranda on such topics as the hazards of wooden guardrails on steel posts (Garden State Parkway) and detailed Hazard Reports (its first one covered diesel-fuel spillage and absence of right-hand mirrors on New York City buses, illegal conditions that have persisted despite seven years of Linko efforts). And this summer the institute will hold its First International Symposium on Transportation Safety in Anaheim, California, coordinated by the institute's Prof. Edmund Cantilli of the Polytechnic Institute of New York.

Despite the backing of an organization, Linko remains unbureaucratized. And one expects that he will remain so if Polytechnic awards him an honorary degree this June, as Professor Cantilli has urged. He continues his relentless field work, armed with camera, clipboard, and a quiet determination to expose the killer details that lack of responsibility has embedded in our highways.

—Robert Poole, Jr.

movies

- **The Wild Geese**
- **King of the Gypsies**
- **Invasion of the Body Snatchers**

• There's a hatful of mind-blowing ideas scurrying about just beneath the surface of **THE WILD GEESE**, but the film itself emphasizes action over ideas, and over characterization as well, in spite of such good actors as Richard Burton, Richard Harris, Hardy Kruger, and Roger Moore. Most viewers of this film will be kept interested by the same cinematic devices that impel them to see a John Wayne Western, with much killing, hairbreadth escapes, and the death of some of the good guys along with most of the bad.

Much more interesting than the film itself is the fact that it was made. Both the novel and the film concern the activities of a group of mercenary soldiers in an unidentified central African nation, engaged in trying to rescue native leaders from communist terrorists whose aim is to take over the country without such inconveniences as holding elections. The film, moreover, is pointedly critical of terrorists wishing to take over by violence, through the use of intimidation and torture of the most gruesome kind—even when the people who spearhead and finance this enterprise are communists. In doing this, the film runs afoul of Hollywood's Rule No. 1: *never* criticize communism. (The film was not produced in Hollywood, but in Great Britain, and filmed in the Transvaal.) Could it be that the betrayal of the mercenaries by the wealthy British industrialist (Stewart Granger) who gets a "better offer" from the terrorists, is a not-so-oblique attack on Britain's betrayal of Rhodesia? The film doesn't tell us, but the production notes say, "*The Wild Geese* is dedicated to the memory of Moise Tshombe, the voice of reconciliation in Africa." Tshombe was, of course, the native leader of Katanga who resisted the invasion of his country by vastly superior numbers of UN troops (largely financed by the United States). Tshombe's counterpart in the film is also its hero, though he dies at the hands of the terrorists, just as Tshombe died under suspicious circumstances in an Algerian prison.

It is not likely that Jimmy Carter will extend his praise of Anthony Quinn's recent film about Mexico to *The Wild Geese*, for its message completely contradicts the Jimmy Carter-Andrew Young policy, along with that of the World Council of Churches, of financing terrorists in order to bring down existing governments in the name of "liberation" (read: the New Despotism) and "equality" (read: equal destitution for everyone but the tyrants). During the past year Carter expropriated yet another $100 million of American taxpayers' money to finance the terrorists, who were already being financed and armed by the USSR.

A small fraction of the viewers of this film may be able to discern, behind the stock adventure-yarn plot, some of the issues behind the African struggle: on the one hand, the Soviet Union plus Cuba plus natives animated by Soviet promises of takeover and, on the other hand, the populations (both white and black) of these countries, who do not relish the thought of an outside takeover by the Soviets or by anyone else. Perhaps some viewers who came simply for entertainment will exit the theater with some thoughts about a side of the issue that is seldom mentioned in the press or the media, and hopefully this may make them wonder what their official news-twisters are up to. It is primarily for this reason that one should be grateful that the film was made.

But it is all probably too late to do much good. Daniel Carney, a resident of Rhodesia and author of *The Wild Geese*, has just written another book, entitled *Come Watch My Country Die.*

—John Hospers

• The first film within memory that is devoted exclusively to modern gypsy life is not a cynical put-down, and just as certainly it is not a whitewash. **KING OF THE GYPSIES** is by turns dramatic, comic, revealing, and frightening. Filmed in New York City and New Jersey, it follows the adventures of a gypsy clan from the old patriarch and his wife (Sterling Hayden, Shelley Winters) to the grandson who "tries to bring them into the 20th century" (Eric Roberts). The film contains scenes of considerable emotional power, interlaced with others that are mostly reportage of interesting gypsy customs. In structure it is more episodic than organic; there is too much piling up of anthropological detail for there to be great cumulative power. All in all, the film is well worth seeing, though one should not expect the experience of a lifetime.

Much of the film is given over to depiction of life lived by standards that are alien to most of us: by force, deceit, theft, fraud, and endlessly varied con jobs on unsuspecting outsiders. More interesting to champions of liberty, however, is an aspect less emphasized in the film, though it is there: the refusal to pay taxes, to have births certified, to be involved with military service, to call the police when crimes are committed; and the use of the clan "king" to adjudicate conflicts of interest. The film shows through one detail after another what it is like to be *in* a nation but not *of* it—an achievement that was fairly easy in the 19th century but more difficult now in an era of massive regulation. It also helps to explain why the nonconformity of gypsies is anathema to fascistic and socialistic rulers who attempt to rule by force every detail of other people's lives and why the gypsy culture was the first to be exterminated by Hitler and Stalin.

—J. H.

• The idea of a city or a nation or a planet being taken over by invaders (from earth or outer space) who through superior technology enslave the denizens of earth —not merely their bodies but their minds —is a chillingly fascinating one and one that opens up to the imagination a vast variety of scenarios. **INVASION OF THE BODY SNATCHERS** presents one of them, so extremely implausible as to make people who are located in the real world dismiss the film as "two hours of damn fool nonsense," which it is. Still, through willing suspension of disbelief, one might accept virtually anything as a way of getting an interesting story off the ground. But even on its own terms it doesn't do it that well (except, as usual, in the special-effects department). The story sometimes disappears into inconsequential blind alleys, many incidents are left unexplained, and one is often at a loss to know why the characters do what they do when they do it. One is diverted from these illogicalities by ever-weirder sound effects and frightening visual effects, but the patchwork job doesn't hold. For "healthy" terror and suspense, *Halloween* is many times better.

The film has nevertheless acquired sudden popularity and even critical acclaim among the trend-setters of the nation's critics—the Eastern liberal establishment—probably because it qualifies as "high camp." Apparently it is not because of the thought-provoking character of the main idea, for those who see the most fascination and terror in dictatorships from outer space are on the whole the least sensitive to the variety of dictatorship that is being grown back home.

—J. H.

books

On the Manipulation of Money and Credit

By Ludwig von Mises. Translated by Bettina Bien Greaves. Edited by Percy L. Greaves, Jr. Dobbs Ferry, N.Y.: Free Market Books. 1978. 296 pp. $14.

The Spirit of the Austrian School

Why Socialism Always Fails

Liberty and Property

By Ludwig von Mises. Alexandria, Va.: Audio Forum. 1978. $12.95 each (tapes).

Reviewed by Israel M. Kirzner

Ludwig von Mises, 1881-1973. An internationally renowned economist, recognized leader of the Austrian school, Mises came to be identified as the most consistent and forthright exponent of free-market capitalism, at a time when his profession seemed to be rejecting it as a ghastly failure. When World War II broke out, Mises, just short of 60 years of age, had to his credit a long and imposing list of famous books and monographs in the German language—a list that began in 1902.

Coming to the United States in August 1940, Mises encountered a discouraging wall of professional coldness, if not outright hostility. He was unable to secure the academic position which his prominence surely deserved. He was the outspoken champion of laissez faire at a time when the tide of public and professional opinion was running strongly in its disfavor; he was the mordant critic of inappropriate mathematical and econometric methods in economics at a time when the profession saw its very future in the increased sophistication offered by these techniques.

Despite all this discouragement, Mises continued to write and to teach until an almost incredibly old age (he retired from teaching at New York University in 1969). And gradually Mises's influence came to be felt in the United States. He made a profound impression upon a small group of young academicians and upon a wider group of educated and intelligent laymen. Over the years his English-language works, and especially his monumental treatise *Human Action*, became works widely read, if not yet in academic economics circles, at least among a broad group of discerning readers in the United States and elsewhere.

Since Mises's death in 1973, interest in his work has undergone an extraordinary revival. His ideas are being discussed—by scholars and laymen alike—in seminars and conferences around the country. His works are even included in the reading lists of numerous graduate courses in economics. A growing group of young "Austrian" economists is pursuing original research and writing along lines that would have gladdened Mises's heart.

In this climate of renewed interest in the Misesian approach to economics, it is natural to find a vigorous demand for any work of Mises not yet available and for any material relating to Mises's life. This interest has found gratifying response. Mrs. Mises's fascinatingly warm and lively account of her life with Mises has been greeted with great enthusiasm. Mises's own hitherto unpublished *Notes and Recollections* (translated and edited by Professor Sennholz) has been widely sought after. A number of Mises's major works have been republished; moreover, some of his earlier, hitherto inaccessible German works have been made available to English-speaking readers in new translation; various taped recordings of lectures given by Mises are now available. This review discusses the welcome appearance of a collection of fresh translations and of three Mises tapes.

On the Manipulation of Money and Credit offers the translation of a major 1928 Mises monograph ("Monetary Stabilization and Cyclical Policy"), translations of several shorter papers by Mises (including the notable 1923 essay "Stabilization of the Monetary Unit—From the Viewpoint of Theory"), and a hitherto unpublished 1946 paper by Mises. This collection of papers is prefaced by a lengthy introduction by the editor, Percy L. Greaves, Jr., and followed by an epilogue consisting of five of the editor's own papers published originally between 1954 and 1977. A bibliography of Mises's contributions on the subjects of money, credit, and banking concludes the volume.

Ludwig von Mises

The editor of the volume, Percy L. Greaves, Jr., and the translator, Bettina Bien Greaves, are well known as among the very staunchest disciples of Mises. Both were long-time members of Mises's New York University seminar; both came to be associated extremely closely with their beloved teacher in the later years of his life; and they have virtually dedicated their lives to the study and dissemination of his teachings. It can be stated without fear of contradiction that they have poured into this volume all their love for their great mentor, all their loyalty and commitment to the propagation of his work.

The volume is a monument to their meticulous and scholarly attention to the slightest detail—whether relating to terminological precision, to the accuracy of citations, or to capturing nuances of meaning in translation. The translator appears to have successfully overcome all the obvious obstacles confronting a would-be translator of so profound a writer as Mises. The editor has provided us with all the background and footnote material necessary for the proper understanding of Mises. This includes copious references to Mises's earlier and later works, clarification of allusions, as well as elucidation of difficult passages. The result is a volume that should in many ways serve as a model for similar efforts. Yet, despite my wholehearted admiration for all the scholarly labors invested in it, I feel bound in honesty to register cer-

tain serious reservations concerning the final product placed before the public.

Mises was an uncompromising defender of the free market. In this role his work was in large part naturally, and deliberately, directed to the broad public of intelligent laymen. In addition, as a result of the inhospitable intellectual and professional climate within which Mises pursued his work in the United States, he found himself writing and speaking more and more for and to the educated public and less and less for and to his professional colleagues. For better or for worse, defenders of Misesian ideas—and Mises himself—found themselves engaged, not in controversies *within* the economics profession, but in polemics *against* the economics profession. Intellectual honesty required no less; in many senses Mises's disdain for the "establishment" of professional economics must be judged a rare and shining example of academic integrity.

Yet this circumstance tended—most unfortunately in my opinion—to overshadow an aspect of Mises's character that deserves to be recognized and understood. Mises was not simply a cogent defender of the free market. He was a defender of the market economy *as a result of his work as a disinterested scientist*, as a member of the international community of scholars whose intellectual values he was proud to share.

This facet of Mises emerges clearly in "The Spirit of the Austrian School," a tape that records an informal talk given by Mises to his faculty colleagues at NYU in the very early '60s. In the talk, Mises reminisced about his years in Vienna, and especially about the heyday of his *privatseminar*. I recall the occasion rather vividly. Professor Hayek was present, and the talk offered a rare opportunity to hear Mises discuss, publicly and charmingly, his own life and work in earlier years. In the talk, he was perhaps proudest of his contributions to the *internationalization of science*, to the development of scholars (who had been members of his seminar) for the enrichment of economics (and other disciplines) all over the world. Mises's quiet pride in his illustrious students (*including* those with whose ideas he was, most emphatically, unable to agree) is heart-warming. One senses from this talk how deeply Mises missed the lively interaction of scholarly minds, which he had enjoyed in Vienna; how much he missed the thrust and parry of conflicting opinion among colleagues who could agree on perhaps little else than that they were fellow-searchers in the quest for truth.

All this is of relevance to the Greaves volume. Since Mises's retirement from NYU in 1969 (and more particularly since his death in 1973), the climate in professional economics has changed significantly. No longer are Mises's views on scientific method in economics, or on economic policy, treated with cold disregard (or worse). Austrian economics, in which Mises's work occupies the place of honor, is once again coming to be taken seriously. The free and open professional discussion and extension of his work, for which Mises yearned but which was denied to him, has once again become a genuine possibility.

In this climate, the appearance of hitherto inaccessible work by Mises—especially of so important and seminal a contribution as his 1928 monograph—could serve as a welcome opportunity for renewal of scholarly interest in Mises's pioneering contributions to the monetary ("Austrian") theory of the trade cycle. As the editor implies in his introduction, the papers made available in this volume provide material for an exploration of the roots of Hayekian cycle theory and for an analysis of its points of disagreement with that of Mises, upon which—even after the recent brilliant book-length study by Professor O'Driscoll—much still remains to be written. Yet it must be stated, with regret, that this volume is *not* likely to encourage such efforts.

This must, sadly, be judged to be the case because the volume has been edited —understandably, perhaps, yet nonetheless unfortunately—as if Mises's views are to be treated with the reverence reserved for unquestioned truth. Now in my opinion—an opinion on which I have had frank and helpful exchanges of views with the Greaveses—this will simply not do. If Misesian economics is once more to be treated with the scientific respect it deserves, it must be analyzed, questioned, and challenged. It must be compared and contrasted with the work of other economists, Austrian or otherwise. It must be treated, not as a body of established truths, to be mastered as if by rote before engaging in further work, but as the contribution of a brilliant thinker to the rich background of economics against which future research can be fruitfully undertaken.

This approach to the study of Mises may appear novel to those of us who studied under Mises when professional discussion of his work was well-nigh unthinkable. Yet such an approach is surely the only route to the long-run vitality and survival of Misesian insights. There can be little doubt that this approach would, all in all, have given our "Professor" the greatest pleasure.

A further paragraph or two are necessary to comment briefly on the tapes. The title chosen for each of the tapes seems to have been somewhat arbitrarily (and, for one or two of them, even somewhat misleadingly) selected. The most valuable of the tapes, "Liberty and Property," is a Mt. Pelerin Society address given in the '50s. It gives us Mises as we remember him most strongly—the assured and polished academic lecturer spelling out a scholarly defense of capitalism, at once persuasive, penetrating, and most powerful. "The Spirit of the Austrian School" is, as mentioned earlier, a talk reminiscing in delightful fashion about Mises's intellectual life and work during the 1920s.

It is, frankly, painful to have to comment on the third tape (incorrectly titled "Why Socialism Always Fails"). This records a lecture given by Mises at a very advanced age. For those fortunate enough to have been present on that memorable occasion, it must have been thrilling indeed to hear the great Mises himself, in his 89th year, explain the role of voluntary exchange in social processes. Yet the effect of the tape is most unfortunate. Mises's voice is frail; his facility with language appears flawed. Although at times (especially during the question period) Mises displays flashes of his characteristic brilliance and wit, the overall impression seems to suggest that its sale commercially is to be regretted.

Israel Kirzner, who teaches at New York University, is the author of Competition and Entrepreneurship *and* The Economic Point of View.

Darkness and Scattered Light

By William Irwin Thompson. New York: Anchor Press, Doubleday. 1978. 189 pp. $3.95 (paper).

Reviewed by G. Harry Stine

Unlike many books about the future, I had trouble picking up this book once I had set it down. Why? It is an intellectual morass of mysticism and illogical writing that did not give me any reasoned insight into the future or the current factors shaping the future. The author, in company with many current intellectuals, wishes to abandon logic and reason and go backwards in history, but *back* is for emergencies only or for intellectual cowards fearful of the unknown and inadaptable to change.

William Irwin Thompson gained his Ph.D. from Cornell and styles himself as a "cultural historian." The difference between a "cultural historian" and an anthropologist is difficult to understand; *cultural historian* seems little more than a modern academic buzzword. I was ex-

ceeding surprised and even disappointed that Thompson's book shows very little evidence that he knows of or understands any terrestrial cultures other than the Euro-American culture in which he happens to live—even though he writes in the style of an oriental mystic.

Thompson tries to write about the future and succeeds in so doing only in such disconnected and cerebral concepts that he gives himself away as one who is being pretentious and covering it with verbiage. In common with many modern intellectuals who neither understand science and technology nor grasp the implications of this recently learned application of reasoned thought to human problems, Thompson foresees the usual Intellectual's Doomsday: gloom and doom, death and destruction, famine and pestilence, and the march and countermarch of corporate armies looting and raping the worldwide marketplace for monetary profit.

Thompson makes an incredible statement. He believes we must shift our emphasis from machines to mysticism. True, there is much we don't know about the universe, including about ourselves. But must we now abandon 250 years of development of the most successful, rational, logical problem-solving methodology of human history and return to the demi-methodology of mysticism that had 25,000 years in which to prove itself and did not?

History is ripe with examples of handling our world with both mysticism and with reason. While it may be unfortunate that military technology is always the leading edge of the state of the art, and while application of military force may in some ways be irrational, it does provide us with explicit examples of the mystical and the rational methods of utilizing technology. A cannon is a very specialized machine. It must be kept clean. The shot must be polished regularly. Powder kegs must be kept dry and turned end-for-end on a regular schedule. And the crew that operates the cannon under considerable pressure during battle must be disciplined and drilled thoroughly and regularly. Until only recently when technology permitted the great simplification of the assault rifle and the SAM missile, a soldier had to have the rational procedures of operating his devices drilled into him. Some cultures never succeeded in doing this. Most European peoples did succeed. The ones that didn't, seem comical to us. For example, at Selaugor in Malay in 1871, the soldiers of Räja Mahdie's artillery corps would load a cannon, lash it down with rattan, and then gather round it to pray for a successful result.

Mysticism and technology do not mix. Technology requires reason to develop and reason to use wisely. We shall not solve our current problems by any other means than applying *thought* to these problems and developing the technology to solve these problems.

The factor that made Thompson's book so devilishly difficult to read is its disconnected, rambling style. There were several times when I felt that Thompson was perhaps leading me to some new insight, only to have him change direction in mid-paragraph or bog down in a swamp of erudition. His writing is disjointed and disconnected with no thread of logic running through it. Normally, a reviewer can read the first and last chapters of any nonfiction book and get 99 percent of its meat. The intervening chapters merely justify, flesh out, and support the contentions set forth in the first chapter, while the final chapter offers a wrap-up. It was impossible for me to read Thompson's book this way. It began with the mystical statement that we should replace machines with mysticism; it was mystical throughout; and it never did justify its initial contention.

Thompson has no clear concept of the future. He foresees semi-doomsday of a new Dark Ages followed by some sort of mystical renaissance. Hence, his title. However, we had better not be heading into a Dark Age, because people have their fingers on nuclear triggers this time . . . .

I, for one, am getting weary of overeducated intellectuals crying "wolf" and continuing to forecast doomsday. Rather than Thompson's future of "darkness and scattered light," I would place my money, my reputation, and my life on a future of "brightness and scattered darkness" in which, using our cerebrums instead of our cerebellums, we slowly improve things for the entire world with the exception of highly localized Malthusian crises—which is precisely what we are engaged in right now.

Thompson does not stack up to such people as Dr. Carleton S. Coon, C. Northcote Parkinson, or Jacob Bronowski. In spite of the philosophy expounded in quasi-intellectual books such as Thompson's, *Homo sapiens* will indeed justify the name he has given to his own species.

G. Harry Stine is the author of The Third Industrial Revolution.

The New Mencken Letters

Edited by Carl Bode.
New York: Dial Press. 1977. 670 pp.
$19.95.

Mencken! For a generation the name seared itself into America, galvanizing emotions of adulation or hatred in the minds of nearly everyone who *meant* anything at all.

In 1926, Walter Lippman, essayist, editor, and palindromic pundit, called Mencken "the most powerful personal influence on this whole generation of educated people." In 1979, however, a scant 53 years later, ask anyone *who* H. L. Mencken was. This is a particularly dirty trick to play on college or graduate students, who should know such things but who are on the receiving end of inculcation rather than education. Chances are that even the merit-scholar-types will gaze at you blankly, avert their eyes, and mumble quizzically, "H. L. Mencken?"

In his lifetime, Mencken is estimated to have written over 100,000 letters; in print he left a bulk of books, essays, articles, reviews, epigrams, poems, and critiques stretching out to more than five million words. He was, perhaps, the quintessential American journalist, in whose shadow all subsequent practitioners stand. But he was so many other things as well, including a seminal philologist whose most enduring contribution was *The American Language* with its several supplements. Additionally, he edited the *Smart Set* magazine, presiding with George Jean Nathan over its transmogrification from a pulp sheet to a literate periodical, of which Mencken remarked, "The name is ghastly, but now and then the magazine is worth at least a nickel of the thirty-five cents we charge for it." He also edited, for ten years, the *American Mercury*, a post he resigned in January 1934. Mencken's political reportage is of a genre all its own, lively with gross distortions, facile generalities, specific insults, and filled with an exuberance unmatched by any other political correspondent, the majority of whom seem unfortunately and erroneously to consider themselves men of importance.

Mencken's letters reveal, to the extent that he could consciously surrender his privacy, some insight into the human being masked by the public persona. Firstly and finally he was an epistemological skeptic: "What is Man, of course, is not profound. But it shows the rare quality of honesty—it tries to examine the truth. The fact is, of course, that there *is* no truth. You always assume that, because Christianity seems to me to be piffle, I believe in some contrary theory—that, because I laugh at Christian Science, I therefore swallow all the childish hocus-

pocus of incompetent family doctors practicing up side streets. This is absurd. My skepticism is more thoroughgoing than you imagine. I doubt everything, including even my own doubts."

A representative précis of the multifaceted Mencken's career is not feasible within the strictures of a review of a collection of the man's letters. Suffice it to summarize by noting that Mencken was a *force* within his own age—which, however, is not our age, although his life ended in 1956. In 1948, he suffered a stroke that robbed him of his ability to read, write, or converse coherently, all the ingredients that made Mencken the man he was. He dangled for eight years in this condition; the internal agony must have been excruciating.

As a force, Mencken had perquisites mere mortals do not. He affixed his personal imprint to an epoch, shaping and molding its ideas, tastes, and opinions to a degree, it was said, unmatched by any other private person of his time. He was a Nietzschean transvaluator of values and, as he defined them, so did his age adopt them. His biographer, the duly celebrated author William Manchester, called his work on Mencken *Disturber of the Peace.* And so Mencken did disturb the peace, consistently and over many years, often wrongly and with prejudice aforethought, but always in the direction of steering the "civilized minority" of men to remark the anomalies, thereby raising the level of their aspirations. A not unworthy monument to the man so nicely adumbrated in this collection of his letters.

—William J. Doran III

viewpoint

(Continued from p. 41.)

tional amendment to balance the budget would help turn off the "perverse government money machine." That would control inflation because it would control the inflating.

Such a development is not only desirable but essential to preserving the civic virtues of democracy. These cannot be maintained through long-protracted inflation. The experience of many countries proves this. Inflation destroys the values upon which a liberal, humane society depends. It turns expectations upside down, impoverishing the elderly, making fools of those who save, turning every contract into a fraud, and eventually creating conditions that no person of good will could desire. As Thomas Mann wrote: "There is neither system nor justice in the expropriation and redistribution of property resulting from inflation. A cynical 'each man for himself' becomes a rule of life." In such a condition, when the majority is deprived, defrauded, and frightened, politics can take appalling turns. We dare not attempt to prove that America would be an exception to the rule that protracted inflation weakens and eventually destroys free institutions.

That is why we must heed the advice of responsible people of all parties, now joined by Governor Brown, and enact a constitutional amendment outlawing inflationary deficit spending.

letters

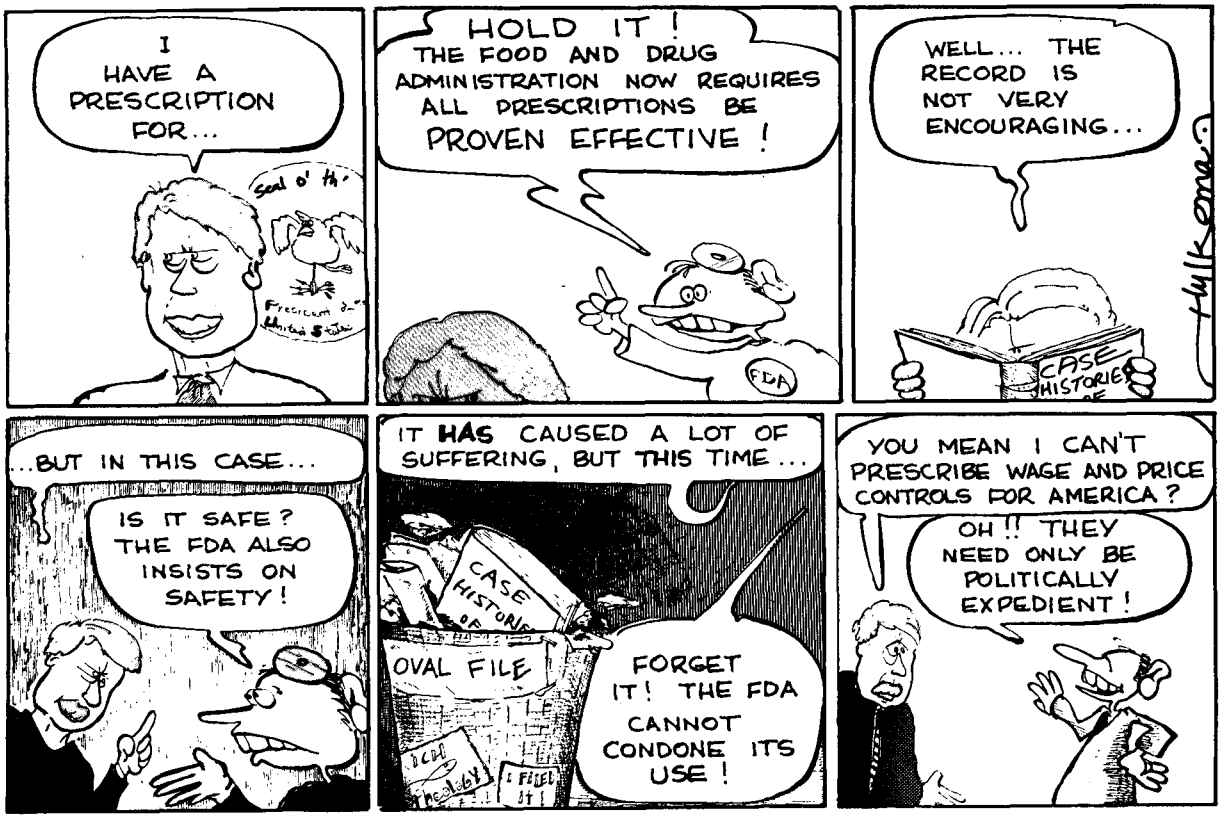
(Continued from p. 8.)

which turns sour very quickly. The farm once produced 600 gallons of milk a day, but now produces at best around 50 gallongs of very watery milk.

The method by which the government came to acquire the farm in 1975 is an instructive lesson for investors. The former owners, whom Bartlett correctly stated made only small profits, put the farm up for sale after the government refused to allow them to bring in expatriate management. The government then refused to allow foreigners to buy the farm, saying farming was reserved for

rudebarbs

by Randall K. Hylkema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...BUT IN THIS CASE...
IS IT SAFE? THE FDA ALSO INSISTS ON SAFETY!
IT HAS CAUSED A LOT OF SUFFERING, BUT THIS TIME...
CASE HISTORIES OF
OVAL FILE
FORGET IT! THE FDA CANNOT CONDONE ITS USE!
YOU MEAN I CAN'T PRESCRIBE WAGE AND PRICE CONTROLS FOR AMERICA?
OH!! THEY NEED ONLY BE POLITICALLY EXPEDIENT!

Coming Next Month:

The JFK assassination—what happened? how did it happen? and who did it? In the May issue William Marina—historian, and eyewitness from the famous grassy knoll—delves into the facts and allegations, old and new, surrounding the events on November 22, 1963. Peter Metzger uncovers the hidden aims and spurious methods of "the coercive utopians," the environmental activists promoted to government by Carter. Law professor Thomas Haggard considers the "right to work" controversy and what it means for individual liberty. Lawyer Don Eric Franzen recounts the dramatic case of Wilhelm Reich, which ended with his imprisonment and an FDA-supervised book burning, and questions the constitutional legitimacy of government regulation of scientific research. And an angry schoolteacher reveals the chaotic conditions in the New York public schools and offers a retaliatory strategy. Plus Alan Reynolds with a Viewpoint, Tim Condon on taxes, a review of books on punishment, and all of REASON's regular features.

Bahamians. The government was then able to buy the 2,500 acre property at the knock-down price of $3 million.

Hatchet Bay is not the government's only enterprise. In the last few years it has also purchased hotels, casinos, fishing boats and so on, and now wants to own a dog track.

Despite these unfortunate experimental excursions into socialism, the Bahamas is by no means as bad as is sometimes made out. The government, indeed, has in many ways matured a lot in the past couple of years and investment is beginning to return. In areas such as tax-haven and off-shore banking business, the Bahamas remains a highly attractive, stable location.

Vincent James
Bahamas Dateline
Albany, GA

Oops!

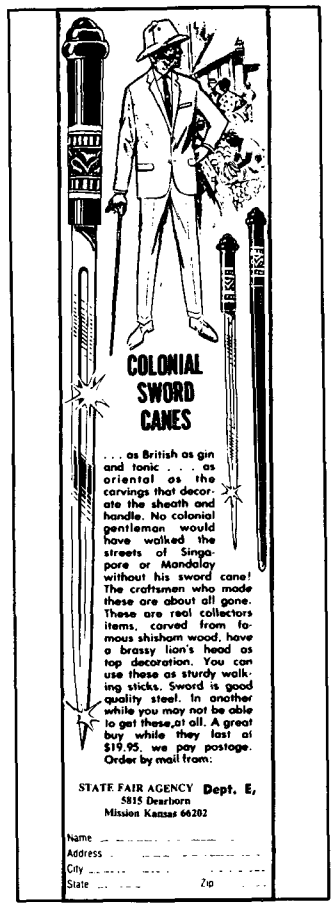
This will correct the error in my letter on page 11 of the January issue. Inadvertently, I referred to the Socialist Workers Party instead of the U.S. Labor Party.

Shelly Waxman
Chicago, IL

Warning

I read Jeffrey Smith's review [January] of Gerald K. O'Neill's *The High Frontier: Human Colonies in Space* and bought the book. It was a disappointment. It consists of a poorly arranged narrative description of his ideas with excessive repetition, and O'Neill is fond of quoting Robert Heilbroner, that delightful socialist economist who thinks he should be one of the elite in control. After exposing his ignorance of economic and political facts, e.g., inflation is demand exceeding supply and "the pursuit of happiness" is a phrase from the Constitution, O'Neill is then skeptical of a professional crossing over into another discipline. Smith could have provided a few caveats.

Brian J. Monahan
Evergreen, CO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I PLAN TO WITHDRAW from the world of the mass-man, whose delusions I refuse to fuel. I am happy to correspond, inquire, and/or work with those people whose minds are open to reason. I am interested in inquiry into the nature and purpose of human life, and willing to discuss the results of this inquiry with other human beings. With regard to material productivity: I have great talent for making use of computers; however, all computers I have encountered have been controlled by the mass-man, and consequently no rightful use could be made of them. Box J2, Reason.

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THE CLASSIFIED AD DEADLINE FOR THE JUNE ISSUE IS APRIL 1st.

With your help, the spirit of peaceful enterprise can reach an unprecedented future.

Movement into space has come to a crossroads. What we do now may form the setting for space developments in subsequent decades and determine who will realize benefits from the frontier.

Will space become a free commercial arena for productive uses of new technology? Or will rivalries among superpowers limit freedom for entrepreneurs?

The Sabre Foundation has for ten years supported initiatives to encourage free-market trends. In the decade since the U.S. landing on the moon, Sabre officials have been monitoring research that now suggests the likelihood of a new large-scale move into space, because of great commercial opportunities that wait there.

In 1976, an initiative was launched under the guidance of Sabre's World Projects Division to create a durable international basis for development of space resources. The key to the concept: establishment of a new World Space Freeport. Taking the precedents of Hong Kong and Singapore to their logical conclusion, the freeport for space would offer an environment of unparalleled attractiveness to investors.

By providing investors with complete exemption from taxation and tariffs, a 200 square mile freeport could encourage investment and generate millions of dollars in lease rentals per square mile each year. A portion of these revenues would be used to fund practical space efforts to benefit users from all countries, especially the developing nations.

The Freeport Project has created an unprecedented alignment of support for its goals from individuals, organizations and nations. Through its World Space Council, space scientists and officials from eighteen countries have joined to guide investment of freeport income into activities that will ensure a peaceful, international presence in space.

A major goal is to reduce cost barriers for users seeking to conduct productive activities in space, through creation of a freeport-based partnership between commercial enterprises and the developing world. Space already supports a multi-billion dollar satellite communications industry and promises to become the site of new industrial processes requiring the presence of zero gravity, a hard vacuum, or abundant energy. Products from these processes have the potential to revolutionize existing patterns of electronics, pharmaceutical, metallurgical and energy-generation activities.

To help realize this promise, notable space pioneers and free-market experts have joined the Freeport Project. Supporters include Robert Heinlein, Arthur C. Clarke, Krafft Ehricke, Michael van Notten and Robert Poole, Jr. Among the many organizations contributing services, a major New York law firm has been invaluable in the preparation of freeport enabling legislation.

A dozen prospective host nations have responded positively to the freeport initiatives to date. Because of their interest, the foundation's financial base must be expanded to maintain momentum. The Space Freeport project has need for support that will allow continued independence from political and corporate contributions with attached conditions.

You can be instrumental in the opening of our next great frontier. With your support, the World Space Freeport can encourage development of opportunities for non-governmental users and lay a peaceful foundation for human freedom in space.

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"Self-esteem comes from refusing to live lies"...

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The values taught in the Intensive — through a variety of experiential learning situations — are self-awareness, self-acceptance, self-responsibility, self-assertion, and personal integrity. These are the requirements of a healthy self-esteem.

The importance of self-esteem

Self-esteem is the experience of being competent to live and worthy of living. The level of our self-esteem is the single most potent factor in determining our effectiveness as human beings, in the areas of work, love, and human relationships generally.

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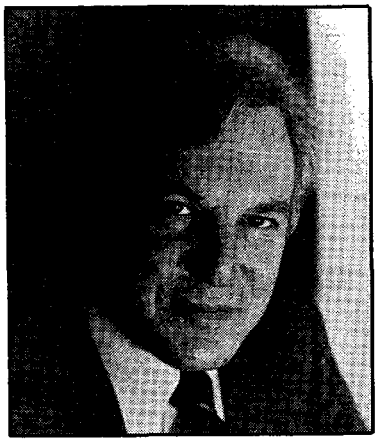
SELF-ESTEEM AND THE ART OF BEING aims at putting us in contact with our own highest possibilities. It operates in an atmosphere of warmth, respect, and great regard for human dignity.



Nathaniel Branden is the author of *The Psychology of Self-Esteem, Breaking Free,* and *The Disowned Self.* He is in private practice in Los Angeles, is Executive Director of the Biocentric Institute, offers training to psychologists, psychiatrists and other mental health professionals, and conducts INTENSIVES in major cities throughout the United States.

Learning to honor ourselves

"Self-esteem comes from refusing to live lies or to fake who we are," holds Dr. Branden. The distortion of our reality — the denial of our perceptions and feelings — begins in childhood. Fortunately, we do not have to be stuck there.

Most of us carry within us a good deal of buried childhood fear, anxiety and pain that obstructs our life as adults. Through confronting and re-experiencing these feelings we can learn to let go of them — to break free. We can accept the words of James Thurber: "Let us not look back in anger, or ahead in fear, but rather around in awareness."

Learning to hear — and love — the music inside of us

The art of being is the art of knowing and accepting who we are, at every moment of our lives. It is the art of awareness without denial or avoidance. It is the knowledge that we do not exist to fulfill anyone else's expectations or demands. It is the ability to relax into the fact that our lives are our own to live and that the responsibility for our happiness is ours to take.

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Reason Magazine,
Dr. Cheri Adrian

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